



Traffic Congestion Scrutiny Committee Briefing Note

27 February 2008

Report of the Assistant Director of City Strategy

Traffic Congestion - Broad Strategic Options

Summary

1. This Briefing Note responds to the request by the Committee for a report to inform their discussion on the broad strategic options for traffic congestion.

Background

2. At its meeting on 16 January 2008 the Committee requested a briefing note that considered the broad strategic options for York on the following:
 - Continuation to LTP approach
 - Intermediate Plans
 - York Northern Outer Ring Road
 - Network Management
 - Modal Shift/Soft Measures
 - Demand Management
 - Impact of major new developments going on in York

Local Transport Plan

3. York is unique in the United Kingdom with its historic character and sequential development of the highway network over the last 2000 years. The capacity of the core network cannot be easily or cheaply increased without damage to the historic nature of the city. The geographical constraints of the East Coast Main Line and rivers on a general north-south axis further restrict the ability to provide additional road capacity.
4. In the recent past, particularly the last 30 years, the growth in private traffic associated with increased wealth and reduced travel costs (in real terms) has led to a year on year increase in traffic volumes throughout the country. Nationally, public transport usage and walking/cycling have shown a general decline. This situation has occurred in both urban and rural areas.

5. Many local authorities have been able to provide additional road space capacity through a combination of bypasses, increased junction capacity via physical changes and linked traffic signal systems. In all instances, the provision of additional capacity has not kept pace with the growing demand for travel. The result of these circumstances is increased congestion and longer journey times by most modes of travel.
6. In York the inability to provide additional highway capacity at anything like the rate at which demand was increasing, necessitated an integrated approach to the provision of transport infrastructure.
7. During the first Local Transport Plan (LTP1) period from 2001 to 2006 the principal strategies to address congestion were a combination of Park & Ride, demand management using parking charges, improvements to the cycling and walking network, use of technology to realise the most out of the network and the introduction of bus priorities on key radial routes. This successfully increased bus patronage by nearly 50% and kept the private car traffic levels in the urban area static at 1999 levels.
8. The strategy in the Second LTP (LTP2) period 2006 to 2011 for tackling congestion is to build upon the successes already achieved and deal with the pressures from the growth in the economy. The core strategies developed for LTP1 and LTP2 are still valid but have not yet been fully implemented due to constraints on resources. The key proposals identified in the LTP2 are to increase the capacity of the Outer Ring Road (ORR) thereby reducing congestion in the city centre and creating road space to reallocate to buses, cyclists and pedestrians; provide additional Park & Ride sites to intercept traffic on all main radials; provision of an orbital and cross city bus network; and manage demand through parking control and possibly access restrictions in the city centre.
9. LTP2 also has further packages of measures aimed at improving road safety, air quality, accessibility, health and well being as well as enhancing education and the economy.
10. The provisional and final Second Local Transport Plans were both assessed to be "excellent" by the Department for Transport resulting in over £900k of additional funding being allocated to the City over the 5 year period from 2006/7 to 2010/11.
11. The evolution and perpetuation of integrated transport policy has been maintained within LTP2 which sets out how the city will plan for, and accommodate, the likely transport challenges over the plan period and beyond.

Continuation of Local Transport Plan Approach

12. The LTP is principally a 5 year plan but has a 15 year horizon. York's transport vision is encapsulated in its strategy.
13. The LTP identified that pedestrians, cyclists and public transport users would have a higher position in the hierarchy of road users than private motorists. Therefore, most schemes put forward for funding should only be considered if the benefits can be principally directed to the groups at the top of the hierarchy.

14. The LTP also noted the need to ensure that for any transport initiative that safety is maximised, and that the potentially negative impacts upon the environment and air quality are minimised.
15. Clearly, with the increasing demand for travel and the low levels of increase in capacity provision, there is the potential for widespread congestion. In York, where high capacity bus infrastructure is provided, particularly the Park and Ride services, inclusion of cycle ways and road space reserved for cyclists as well as a comprehensive strategy for pedestrians, there are good alternatives to the use of the private car in the city. Whilst indications are that walking and cycling in the city have reached a steady state to effect a step change in these modes more facilities need to be provided that meet cycling and walking needs and demands as well as further encouragement to make the shift either through promotions or through controls.
16. Several major schemes were identified in the LTP which would offer a degree of localised congestion reduction, with the prime aim of encouraging private car users to keep out of the city. Should access to the city be required, then alternatives to driving would be provided.
17. Possible areas for consideration by the Committee include the relevance of the current strategy in LTP2 and whether an alternative strategy should be considered for adoptions.

Intermediate Plans

18. Within LTP2 a major scheme was identified called “Access York” that could not be funded from the LTP allocation. The scheme was aimed at improving park and ride facilities for York at Askham Bar and on the A59 together with selective improvements on the Outer Ring Road and bus priority measures on the radial routes. As well as providing enhancements to the city’s transport network it would also seek to support the major development at York Central.
19. Subsequently the Future York Group published an independent report that reviewed the York economy. That report made the following recommendations with respect to transport challenges for the future:

We recommend that the City of York Council be pro-active in working with regional partners to :

- i) Secure the necessary funding to allow for the dualling of the city’s northern ring road.
 - ii) Make the required connectivity improvements to at least one of three regional airports to allow maximum forty five minute transfer time from the city.
 - iii) Investigate options and funding mechanisms to improve sustainable public transport links to neighbouring towns and cities.
20. In response to both these drivers the Council has recently submitted a bid to the Regional Transport Board for a funding allocation to construct two new park and ride sites, one on A59, Harrogate Road at Poppleton and the other on

the B1363, Wigginton Road together with a relocation of the Askham Bar site to a new site that will allow additional spaces and facilities to be provided. Each of these sites could also utilise the potential for a tram/train halt. The total cost of the scheme is £26.4m and will take an additional 0.5m cars off York's roads each year.

21. A further scheme will be submitted to the Regional Transport Board in the autumn that will seek to address the issue of improvements to the Outer Ring Road. Possible options for the improvements are discussed in the next section of the report.
22. The Council is also supporting a study that looks at a tram/train solution for the Harrogate Line that could provide a connection to the Leeds and Bradford Airport. Part of that study will also look at what opportunities there may be for extending the service to pick up settlements on the Pickering Line and those to the south off the East Coast Main Line. This proposal could also provide part of the package of transport measures to serve both the British Sugar and York Central sites. This is at the feasibility stage and the consultant's report is expected in the near future.

Outer Ring Road

23. The Outer Ring Road round York serves 2 main functions
 - Caters for long distance strategic traffic which would otherwise pass through the city
 - Distributes private traffic with a local destination to the most appropriate entry road into York which would include access to Part and Ride sites.
24. The ORR is peculiar in that the southern and eastern sections (A64) is owned and maintained by the Highways Agency. This section of road is a high quality dual carriageway with, for the most part, grade separated junctions. The northern and western sections of the ORR are owned and operated by the City of York Council. The A1237 is single carriageway highway, intersecting with several busy radial routes at grade.
25. The A64 is usually free flow throughout the day, whilst the lower capacity A1237 is heavily congested during peak periods, particularly at the junctions with radial routes. Traffic levels on the Outer Ring Road at peak times have increased by more than 50% in the last 15 years leading to increased journey times.
26. The LTP identified that the junctions on the A1237 would need improving over the course of the LTP period, mainly to prevent a transfer of traffic into the city which would impact very negatively on road users high in the LTP hierarchy, and which could also adversely affect air quality and safety for vulnerable road users within the city. A secondary, but important role in the improvement of the ORR junctions is to reduce congestion to allow a viable and reliable orbital bus route(s).
27. Work on the Strensall Roundabout has recently been completed and has already shown excellent benefits (journey times from Strensall more reliable

and reduced by up to 50% at peak times), particularly to bus services. The Moor Lane Roundabout improvement is nearly complete and it is understood that a bid was submitted by the Highways Agency to the RTB on 15th February to improve capacity at the Hopgrove Roundabout within the Regional Funding Allocation. It is expected that other junctions will benefit from upgrading during the LTP period, mainly in association with bus service enhancements.

28. Council policy for the Outer Ring Road is set down in the report approved by the Planning and Transport EMAP in July 2005. The basis of this report was a study undertaken by Halcrow to assess the current and future operation of the route and propose options for addressing congestion. The study determined that congestion was principally caused by the restricted capacity of the junctions and the links had adequate capacity for the projected demand.
29. The main options considered in the 2005 study were:
- **Option 4: Upgrade Roundabouts/Junctions** – This option comprises localised junction improvements for mitigating the congestion at all of the existing junctions on the ORR.
 - **Option 4a: Upgrade Roundabouts and Links to Dual Carriageway Standard**: As option 4 but upgrade to dual carriageway (without grade separation) between Wetherby Rd (B1224) and Hopgrove roundabouts.
 - **Option 5: Full Dual Carriageway and Grade Separation** – This option considers the likely impact of grade separation and dualling along the section of the ORR between the B1224 and the Hopgrove Roundabout.

Journey Times

<i>The projected end to end journey times for each option are identified below.</i>				
Journey times in minutes along the ORR in 2021 for all Highway Options				
Option	AM Peak Clockwise	PM Peak Clockwise	AM Peak Anti- clockwise	PM Peak Anti- clockwise
Base year 2005	20.0	29.5	21.0	29.5
Option 1: Do-Nothing	>60	44.0	32.0	40.5
Option 4: Upgrade all Roundabouts/Junctions	13.4	12.6	12.0	12.4
Option 4a: Upgrade Roundabouts/Junctions and Links to dual carriageway standard	11.8	11.5	11.9	11.8
Option 5: Full Dual Carriageway including Grade Separation	9.2	9.3	9.6	9.8

Option Costs and Benefit to Cost Ratios

30. Cost at 2005 prices are indicated below. Construction inflation would need to be added to provide current costs. The ratio of assumed benefits (principally journey time savings) against the option costs (Benefit to Cost Ratio (BCR)) for each option are also shown in the table below. The higher ratio indicates better value for money. Note: There are likely to be additional economic and safety benefits to be added which were not investigated in great detail in the original study. The DfT will not fund schemes with BCRs below 1.0 and are unlikely to fund schemes with BCRs below 1.5.

Cost and Benefit to Cost Ratios		
Option	Total Cost/£m	BCR
Option 4: Upgrade Roundabouts/Junctions	22.6	9.1
Option 4a: Upgrade Roundabouts/Junctions and Links to dual carriageway standard (Wetherby Rd to Hopgrove)	54.8	1.9
Option 5: Full Dual Carriageway including Grade Separation (Wetherby Rd to Hopgrove)	115.4	1.0

Members are reminded that the costs identified in the table relate to the study made in 2005 and can therefore only be used upon as a guide.

31. The Planning and Transport EMAP approved Option 4 to upgrade all of the roundabouts and junctions as this proposal had the highest benefit to cost ratio at the lowest cost. The following sequence of implementation was proposed to match the anticipated LTP funding stream and to achieve the most benefits at the earliest stage.
- Block 1: Hopgrove (Highways Agency Scheme), A59, Moor Lane/Askham Lane, Wetherby Rd;
 - Block 2: Haxby Rd, A19, York Business Park, Strensall Rd; and
 - Block 3: Wigginton Rd, Clifton Moor, Copmanthorpe.
32. Owing to changes to transport modeling, funding mechanisms and development proposals since the report was completed the study is currently being reviewed and will be submitted to the Executive in the summer. Projected costs will be investigated in more detail and additional economic appraisal will be undertaken. During the review additional options will be modelled to assist in formulating the best value for money solution for the remainder of the current LTP period and into the future. The revised study will be used to support a bid to the Regional Transport Board to address the issue of congestion on the Outer Ring Road. That bid will be submitted in the autumn of 2008.

33. Areas which could be considered by the committee in relation to the Outer Ring Road are :

- Improvements in capacity and journey times

The original study concentrated on single option solutions for addressing congestion. The review will investigate whether a combination of options such as some dualling and grade separation mixed with junction improvements will provide a more cost effective proposal. In particular dualling of the busiest sections A19 to A59 will be considered however this would also be the most expensive segment to deliver principally due to the number of structures required.

- Facilities for cyclists and pedestrians

The Outer Ring Road acts as a barrier to walking and cycling severing the communities to the north from services within the city. However it also provides an opportunity to provide orbital walking and cycling routes making use of the structures provided to bridge barriers to movement such as the railways and rivers.

The study proposed improvements to the orbital cycle network between Strensall Road and Clifton Moor and additional crossing facilities including subways at the A59 and Strensall Road.

- Public Transport Improvements

Congestion at the Outer Ring Road junctions increases journey times and reduces reliability for radial bus services. Priorities for buses are difficult to provide at roundabouts and therefore the current proposal is for general capacity improvements to be undertaken which also reduce delays for buses. The provision of signals or grade separation could provide additional priority but at additional cost.

The LTP proposes the introduction of an orbital bus service making use of key sections of the ORR (A59 to A19 and Wigginton Rd to Haxby Rd) to bridge rivers and railways. However it is unlikely that the bus priorities could be provided within the existing infrastructure.

- Dualling with grade separated junctions, facilities for pedestrians and cyclists.

Dualling of the ring road could reduce the crossing possibilities for pedestrians. Pedestrian facilities at grade separated junctions may be more difficult to deliver as crossings to the slip roads would be needed.

Dualling of the ring road may encourage additional trips from adjacent areas as the demand, currently suppressed, takes up the additional capacity. However improvements to the route would reduce the incidence of traffic using adjacent residential roads to avoid congestion on the ORR.

- Partial dualling along key lengths

Certain section of the ring road are more heavily trafficked than others, with the central section between the A59 and A19 being the busiest. These sections could be dualled but there is a possibility that adjacent sections would become more congested as a consequence.

- Junction improvements by signalling, enlargement, grade separation

Signalling of the Outer Ring Road would have advantages for providing priority for buses and pedestrian/cycling crossing. However the land take and cost would be high to provide junctions with the required capacity. A mixture of roundabouts and signalised junctions at different junctions along the route is likely to reduce overall capacity.

Modelling suggests that the necessary traffic flows could be accommodated by enlarging some of the existing roundabouts if twin entry and exits were provided. Length of merge lanes would need to be carefully considered and may be constrained by existing structures.

Grade separated junctions would allow the conflicts between radial and orbital movements to be removed and reduce journey times considerably however the cost and environmental impact would be high. Constrained sites, particularly at the A59 and Strensall Road would restrict options for grade separated junctions. Grade separation of a single carriageway would require extended merge lanes for the slip roads which may not be accommodated without significant changes to structures adjacent to the junctions e.g. railway bridge adjacent to Haxby Road.

Highway Option	Advantages	Disadvantages
Upgrade Hopgrove /A59/ Wetherby Rd Roundabouts Only	<ul style="list-style-type: none"> • Reduction in journey times on the ORR in the AM and PM peak. • AM total travel time is halved. • Some reduction in bus journey times. 	<ul style="list-style-type: none"> • Queues in the anti-clockwise direction at the A59 roundabout • Does not address congestion in Haxby Road Strensall Rd areas.
Upgrade All Roundabouts and Junctions. (ORR Study Option 4)	<ul style="list-style-type: none"> • Substantial reduction in ORR journey times. • Minimum ORR travel time is 12 minutes. • Side road queuing is eliminated. • Considerably lower citywide total travel time. • Less air pollution. • Significantly improved and reliable bus journey times. • Can be implemented to match a funding stream. • Future upgrade to Dual 	<ul style="list-style-type: none"> • Slight congestion at the A59/A1237 roundabout by 2021. • Relies on A1237 twin entry and exits to all roundabouts. • Does not eliminate conflict between radial and orbital movements. • Not possible to achieve enlargement within Highway Boundary at some roundabouts

Highway Option	Advantages	Disadvantages
	Carriageway possible.	
Upgrade All Roundabouts and Links to Dual Carriageway standard (ORR Study Option 4a)	<ul style="list-style-type: none"> • Similar operating conditions to Option 4, with relieved congestion at the A59/A1237 roundabout by 2021. • Can be implemented after Option 4. 	<ul style="list-style-type: none"> • Much more costly than Option 4 owing to number of structures required. • Increases car travel demand. • Substantial land take is required
Full Dual Carriageway plus Grade Separation (ORR Study Option 5)	<ul style="list-style-type: none"> • Congestion-free ORR. • Minimum ORR travel time is 9.3 minutes. • Considerably lower total travel time. • Significantly improved and reliable bus journey times. 	<ul style="list-style-type: none"> • Increases car travel demand. • Increased congestion on the approaches to the ORR. • Very costly option. • Substantial land take is required. • Visually intrusive
Traffic Signal Control	<ul style="list-style-type: none"> • Can be employed to favour and encourage radial road use. • Safer pedestrian and cycle crossings. • Opportunity to introduce bus priority measures. 	<ul style="list-style-type: none"> • Difficult to signalise 5-arm roundabouts. • Traffic flow with a mixture of Roundabouts and Signals difficult to manage • Would require introduction of right turn at Hurricane Road junction with Clifton Moorgate. • ORR journey times likely to increase
Additional Link Road. A19 to Hopgrove. (1990s Highways Agency option)	<ul style="list-style-type: none"> • Improves ORR journey times between A19 and A64 Hopgrove. 	<ul style="list-style-type: none"> • Congestion remains between A19 and A64 Copmanthorpe • Increases travel demand between A19 and A64 Hopgrove, thus resulting in more vehicles on the road. • Large land take required • Costly option which does not address all congestion issues
Mixture of	<ul style="list-style-type: none"> • Matches the upgrades 	<ul style="list-style-type: none"> • Additional modelling

Highway Option	Advantages	Disadvantages
Dualling, Grade Separation and Roundabout enlargement	<p>more closely to demand.</p> <ul style="list-style-type: none"> • Land take reduced compared to Dualling option. • Reduced Journey times on Key Public Transport Radials. 	<p>work required to determine best option.</p> <ul style="list-style-type: none"> • Dual Carriageway sections are likely to be at most expensive locations. • Benefit to Cost Ratio likely to be lower than Roundabout enlargement option.

Network Management

34. The Council has a duty under the Traffic Management Act “to secure the expeditious movement of traffic on their road networks”. LTP2 has as one of its strategic objectives for tackling congestion to make more efficient use of the existing transport network and improve the certainty and reliability of journeys by all modes of travel.
35. The committee are asked to note that DfT have recently awarded the Council the status of “excellent” for its Network Management service.
36. York benefits from a modern and sophisticated computer traffic control system which implements optimum traffic signal timings. Dependent upon prevailing conditions, the traffic control system can automatically adapt the signal timings to reduce congestion and to assist public transport vehicles. The improvement in capacity made available by optimum traffic signal control has been used to enable additional facilities to be made available to cyclists and pedestrians.
37. The use of active traffic management via the co-ordination and optimisation of traffic signals has been shown to markedly reduce congestion, especially so in areas where networks are approaching their capacity.
38. The proactive use of traffic control technology is being used to restrict traffic into certain areas such as those suffering poor air quality episodes. Data collected from the traffic control system can greatly assist the transport planning process as trends and recurrent problems can be identified on an objective basis.
39. Whenever possible, signalled pedestrian and cycle crossing facilities are included within traffic signals, with cycle lanes and advance cycle stop lines being present at many of the city’s signalled junctions.
40. As well as electronic bus priority, on corridors where road width allows, bus lanes have been installed to bring buses to the head of any queue so that the bus will usually proceed through the traffic signals on the first green.

41. The effect of pedestrian crossings, cycle facilities and public transport priority are incorporated into the calculation of optimum green time at every major junction such that best use is made of the available capacity at any given time.
42. In January the Executive received a report on the development of York's Integrated Transport Systems Strategy (ITS). The systems is essentially in two parts, those that improve the flow of traffic around the network (UTMC) and those that provide public transport and travel information (BLISS).
43. The Intelligent Transport Systems Strategy has a central role to play in the development of transport in the city and will be vital in meeting LTP aims of promoting public transport and cutting car use. Delivering real-time, accurate information to users of the transport system will increase in importance as a tool to reduce reliance on car travel, and the development of ITS is the tool by which this will happen.
44. Increasing levels of technology are available to the general public, and consequently there is a increasing expectation among the public that live, relevant and highly graphical information will be available to them in all aspects of life. Travel and transport must be a part of this. As transport authority City of York Council must be in a position to use such technologies to best serve the traveling public.
45. UTMC Consists of a central computer system connected to a range of on-street equipment. The main public facing services provided by UTMC are:
 - **Car Park Guidance Variable Message Signs** - uses the message signs located in the City Centre;
 - **Car Park Counting** – counting equipment located in the City centre and Park and Ride site car parks that records the numbers of vehicles entering and leaving;
 - **Driver Information Variable Message Signs** - uses the message signs on the outer ring road;
 - **Dynamic web pages** - gives real-time travel information via the CYC website;
46. **BLISS** is the system that tracks buses running in the City. It provides bus location information, makes predictions about arrival times at stops and allows buses to get priority at traffic signal junctions. It consists of a satellite tracking and radio system installed on each bus monitored by BLISS, a central computing system, on-street displays and equipment in traffic lights. BLISS is also linked to other regional systems and by this means is able to deliver real-time information on mobile phones and via the Internet for any bus service in Yorkshire. The main elements of BLISS are:
 - **Automatic Vehicle Location (AVL)** - the system that uses radio and satellite positioning to track the locations of buses;

- **Public Information Panels (PIPs)** – provide basic bus time predications at bus stops around the City;
 - **Traffic Light Priority (TLP)** – equipment located at traffic signal junctions that gives buses priority;
 - **Information Kiosks** (also called the Cityspace Smart Columns) - located around the City giving real-time bus and web-based travel information and news on street;
 - **Smart Screens** - located at the Park and Ride sites, providing high quality real time bus information.
 - **BusNet** – The ‘back office’ system that allows Council officers and the bus operators to monitor bus location and performance.
47. A major element of the development of ITS over the coming years will be consolidation. The City now has a number of systems capable of giving the traveling public accurate real time information and we will continue to expand and develop these, both to increase their scope and further improve reliability. However, there will also be three core areas of major new development or expansion of the UTMC and BLISS elements of ITS over the 5 years;
- *Increased use of high quality interactive displays on street and in public spaces;* This will involve the provision of additional ‘Cityspace’ kiosks. The intention is that each bus interchange point in the City centre, and the busiest stops outside the City centre has at least one Kiosk. Kiosks (or similar) could in the future also be installed at prominent locations in the foot-streets, district shopping centres and villages. We will also begin to roll-out high quality colour screens at other bus stops around the City, as a replacement for the single colour LED equipment currently used.
 - *Delivery of accurate real time information onto mobile devices and into people’s cars and homes;* Development work is currently underway to allow real time information about travel in the City to be presented to mobile phones and other personal mobiles devices. This will build towards the aim of providing travellers with accurate information where and when they need it. It is anticipated that a preliminary roll-out of this technology will be made during early 2008. Further expansion of this technology will allow information to be provided in people’s homes, using affordable, dedicated hardware and ultimately (as the technology develops) into vehicles. The UTMC and BLISS systems that have been developed to date will form the basis of this expansion in information delivery methods.
 - *Provision of ‘near future’ predictions, using advanced data analysis techniques to offer improved predictions of public transport and highway operation and conditions;* Also building on the current development of the UTMC and BLISS systems, we are now looking at ways of offering an improved level of real time information to the public. This will involve developing UTMC’s ability to analyse data from a number of sources and

offer transport users detailed information and guidance based on current events. The development of such services, building on the systems currently in place is being driven by York's involvement in 'FREEFLOW' a national research project lead by a consortium of universities and industrial partners that will develop new techniques of managing and analysing large amounts of real time data. York will benefit from this in gaining access to the new technologies it delivers to use as part of the new developments outlined above.

Modal Shift/Soft Measures

48. LTP2 has as one of its strategic objectives for tackling congestion to encourage people to make an informed choice for all their journeys and to travel in a responsible manner. One of the elements for delivering the strategy is to encourage smarter travel choices through promotion and advertising. The strategy also puts greater emphasis on promoting sustainable alternatives to the private car that are both convenient and reliable through the use of public transport, walking and cycling, as well as smaller, fuel efficient and alternative fuel vehicles.
49. The use of public transport, walking and cycling are critical to the movement of people around the city. Further growth in private vehicular transport cannot be accommodated without increasing congestion and the degradation of the city's environment and economic wellbeing. Predictions made within the LTP noted that without restraint, private vehicular traffic could increase by 27% in York over the period of the LTP2. To allow for economic growth, the increase in people movement must be taken up by modes of travel that do not rely upon the private car. Such a strategy is an integral element of the LTP.
50. In York, as has been noted earlier, it is difficult to provide increases in transport infrastructure at the same rate as demand increases, therefore there comes a point at which demand will outstrip supply, leading to congestion as networks become saturated. Even at this stage, with long delays, there is a great reluctance for motorists to consider other modes of travel unless there is an overwhelming perceived advantage in doing so. This can be in terms of time, cost, conscience, comfort and combinations of these issues, an assessment not necessarily made by individuals on an objective basis. This behavioural situation is found throughout the United Kingdom.
51. With the provision of good cycling facilities, pedestrian routes, especially in the city centre and a comprehensive park and ride infrastructure, the Council has been very successful at limiting the growth of private vehicular traffic, taking the "excess" demand for travel onto other modes, as objectively measured by surveys.
52. The Department for Transport's document "Smarter choices: changing the way we travel", showed that 'soft' measures, or 'smarter choices' as the report refers to them, could have a positive impact on traffic and congestion levels. These measures, which include school travel plans, workplace travel plans, teleworking, public transport marketing, cycling facilities and car clubs, could reduce peak hour urban traffic by as much as 21 per cent.

53. The Department for Transport's own research has shown that 'soft' factors, such as travel planning, proper cycle facilities, marketing of public transport, teleworking and the like, could have significant impacts on travel behaviour and congestion. The impact of 'soft' factors could be greatly enhanced by complementary demand management policies such as road pricing. Similarly, road pricing itself can be made more palatable and attractive by using these 'soft' policies to support it. During the period when pricing is awaited, interim tools including both 'soft' measures and 'hard' ones such as parking control, speed management and efficient allocation of road capacity, should be implemented widely and without delay.
54. Given the strategic nature of soft measures in LTP2 and the Governments desire to see more soft measures used, the committee may wish to consider those factors that encourage private car users to change their mode of transport to more sustainable means. Campaigns run previously under LTP1 proved to be successful in raising the awareness of the travelling public to alternative modes but due to funding limitations only a limited amount is not carried out under LTP2. The role of the bus and train operators as well as the transport authority in promoting alternative means of transport is critical to encouraging the use of public transport. It is possible that more could be done by the providers through the price of fares, quality and reliability of services, and through the promotion of public transport.
55. The Council has an active green travel planning service for business users as well as schools and the individual, that provides advice and support in the development of plans. The impact that travel planning and information services have in encouraging a modal shift to more sustainable travel should not be underestimated. It should be accessible, available and kept as up to date as possible. The Council currently relies upon the bus and rail operators to provide their timetables and scheduling and external agencies to provide the access points for information. It also has a number of kiosks around the city that can access public transport and other general information, it is expect that the number of the kiosks will increase as funding allows. The Council working with an external partner has introduced a car club into the city and this continues to make steady progress with new users and sites around the city.

Demand Management

56. One of the core elements of the transport strategy in LTP2 for tackling congestion is demand management through parking controls and access restrictions and the investigation of other options for future development within the context of national demand management policies. Demand restraint measures include extensive bus priority measures and access restrictions into the city with priority for buses and lower emission vehicles.
57. On the issue of road user charging LTP2 considers that the use of charges within the period of the plan is not a priority, at the present time, as York has successfully managed the increase in traffic entering the city centre. This has been achieved by adopting a clear parking strategy aimed at replacing city centre long stay spaces with Park and Ride spaces, together with higher charges for city centre parking.

58. The measures in LTP2 are geared toward managing city centre traffic without the use of charging. However, the Council are aware that there are external factors not under its control that affect choice and therefore work on investigating road user charging will be carried out if the current circumstances change.
59. Demand management itself can be an emotive term and covers a range of measures from congestion charging (as in London), to restricted access for particular vehicle types to the undersupply of parking spaces, and/or high car parking charges.
60. It is known from experience in most locations worldwide, with economic growth comes an increase in private vehicular traffic, and that the demand for travel will increase continually if it is not tackled. Even when car ownership is at saturation point, there will still be a tendency for journey lengths to increase, thus continuing the growth in the demand for road space.
61. There are a number of demand management techniques, some of which have been successfully adopted in York. Car parking charging levels, particularly long stay, have been one of the most successful in limiting the number of cars entering the city but of course this has to be a balanced between congestion and the effect upon the city centre economy. The Council also has an extensive residents parking scheme that limits the opportunity for casual parking.
62. Work place parking levels are set out in Appendix E of the Local Plan and are based upon national planning guidance and York's standard are comparable with other standards around the country. Those levels were set to limit the amount of private parking that businesses could enjoy without affecting their business viability. However this often leads to indiscriminate parking on the highway causing disruption and further congestion rather than encouraging travel mode shift to other sustainable means. It also puts pressure on local areas for the imposition of traffic regulation orders that can have an impact upon local residents. This is where good travel planning by companies can be very effective and there are some successful examples of this in the city.
63. A workplace parking levy is a charge made on employers for parking spaces for their employees with a limitation on the numbers of spaces available. The most notable recent scheme is the one proposed by Nottingham City Council. The levy proposed is in the order of £185/year rising to £350 in future years. A workplace parking levy for Nottingham would mean that employers may encourage and support their staff to look at alternative ways to travel to and from work, such as by car sharing, using the bus, tram, Park & Ride or by walking or cycling which would help reduce congestion. All the money raised from a Workplace Parking Levy (WPL) would be invested back into funding more and better public transport in Nottingham, which would reduce congestion. The WPL package will create an increase in public transport capacity in the Greater Nottingham area contributing to a forecast growth in public transport journeys into the City Centre of over 20% from 2006 to 2021. Forecast increases in vehicle flows from 2006 to 2021 entering the City Centre of 8.5% without the WPL package are expected to be constrained further by the WPL package to 6.5% growth over the 15 year period. The Council have

recently decided to proceed in principle with developing the details of the scheme so that if the legal order containing the scheme is ratified by Full Council in 2008, an application could be made to the Secretary of State for Transport for confirmation of the scheme in order to introduce a WPL in Nottingham from April 2010.

64. Access restraint is a further technique that can be adopted and has to a large degree been successful in York with the introduction of rising bollards in three locations around the city. However these are usually very local in nature and do not necessarily reduce the amount of congestion but rather redirect traffic to use other means of access. Only if a city wide scheme was adopted would a change in travel mode be experienced that would reduce congestion.
65. A number of bus priority measures have been introduced on radial routes into the city, particularly where they benefit the park and ride service. The main features of these measures are bus only lanes leading to bus demand traffic signals. This technique allows buses to move to the head of any queue at signal controlled junctions so that their progress and reliability can be maintained. One of the benefits is that bus journey times become shorter and more reliable at peak times encouraging private car users to switch mode of travel. The Council is currently developing a scheme on Fulford Road to support the park and ride service and other bus service together with cycling and walking improvements. There are other opportunities to introduce bus priority measures throughout the city but given the limited road and footway space these will be difficult to implement and will require commitment by the Council to achieve them.
66. It is clear that the Government see road user charging as one of the main options in a package of measures to address the issue of traffic congestion across the country. Road user charging is a way for individual vehicles to pay to use road space. It is extensively used across Europe and some key bridges in this country.
67. Whilst we have no experience in York of these schemes it would seem that there are two distinct types, those that are solely intended to limit access and are therefore cost neutral and those that raise additional revenue to fund new infrastructure or services. Typically the M6 Toll Road is an example of scheme which raised capital on the basis of the revenues expected to construct the new road and is now paying that back over a period of time.
68. There are a number of road pricing mechanisms including, cordon or zone charging, distance based charging, time based charging and most popularly congestion charging as used in London. The different mechanisms can use a variety of ways of collecting the charge such as toll booths, number plate recognition and electronic fee collection via smartcard or in car satellite positioning. Payment of the charge is usually by a variety of means but the favoured mechanism is via electronic means such as the internet or by direct debit.
69. London's 'Congestion Charging' scheme was introduced on the 17th February 2003. It was an immediate success, reducing congestion levels by about 20%. With the scheme now well established, analysts agree that it is working well.

Congestion is lower, journey times quicker, and business has survived without a significant impact. In fact, the scheme has been far more effective than expected, and has removed far more cars from the road than was planned. Removal of traffic from the roads was the primary function of the charges, however, it does mean that less money is being raised. Transport for London claimed to have lost £64 million compared to their forecasted income over the first 6 months of the charges.

70. Initially, motorists had to pay a £5 daily charge to enter the cordon between 7am and 6.30pm on weekdays; now the daily charge is £8. The projected net revenues for the financial year 2008/09 are £123m. Some vehicles are exempt, such as taxis and emergency service vehicles and there are variations based upon the environmental credentials of the vehicle. Cameras take pictures of the number plates on the cars which enter the cordon, and compare with a database containing details of registrations for which a charge has been paid for. People can pay over the phone, internet, and at certain shops within the cordon.
71. The charge has had a dramatic impact on travel demand in the capital. The following is reported in TfL's monitoring study of July 2007:
 - During 2006, congestion charging continued to meet its principal traffic and transport objectives; and the scheme continues to operate well.
 - Traffic patterns in and around the charging zone remained broadly stable during 2006. Traffic entering the charging zone (vehicles with four or more wheels) was 21 percent lower than in 2002, creating opportunities over this period for re-use of a proportion of the road space made available.
 - Traffic circulating within the zone and on the Inner Ring Road, the boundary route around the zone, remained comparable to previous years following the introduction of the scheme.
 - During 2006, TfL has observed a sharp increase in congestion inside the central London charging zone. This has occurred despite the fact that traffic levels have continued to remain stable. Congestion levels are being influenced by an increase in activity that has affected the capacity of the road network for general traffic – particularly an increase in roadworks in the latter half of 2006, notably by utilities.
 - In addition, there is some evidence, as first reported in TfL's Fourth Annual Impacts Monitoring Report, of a longer-term 'background' trend of gradual increases to congestion. This is likely to reflect a combination of traffic management programmes that have contributed to fewer road traffic accidents, improved bus services, a better environment for pedestrians and cyclists, and improvements to the public realm and general amenity. But these interventions have also reduced the effective capacity of the road network to accommodate general vehicular traffic.
 - The impact of congestion charging therefore needs to be assessed in this context. The reduced levels of traffic mean that, when compared to

conditions without the scheme, congestion charging is continuing to deliver congestion relief that is broadly in line with the 30 percent reduction achieved in the first year of operation.

- The factors discussed above mean that a comparison of congestion levels in 2006 against pre-charging baseline is potentially misleading. However, carrying this comparison through, congestion was 8 percent lower in 2006.

Central London Congestion Charging Scheme Overview

- The scheme generated net revenues of £123 million in 2006/2007 (provisional figures). These are being spent on transport improvements across London, in particular on improved bus services (£90m operating costs/annum and £20m on extra buses).
- Public transport continues to successfully accommodate displaced car users; and bus services continue to benefit from the reduced congestion and ongoing investment of scheme revenues.
- The overall buoyancy of the London economy has contributed to growth in public transport patronage, although volumes of travel to the charging zone by Underground in 2006 were only slightly higher than those that prevailed in 2002.
- Further economic trend data and comparative analyses continue to demonstrate that there have been no significant overall impacts from the original scheme on the central London economy. General economic trends are considered to have been the predominant influence on the performance of central London businesses over recent years. The central London economy has performed particularly strongly since the introduction of congestion charging, with recent retail growth (value of retail sales) in central London at roughly twice the national growth rate.
- Reductions in road traffic casualties and in emissions of key traffic pollutants in and around the charging zone continue to be apparent, alongside continuing, favourable 'background' trends in both of these indicators for 2006.
- The operation and enforcement of the scheme continue to work well, with several further improvements and innovations introduced during 2006, alongside TfL's preparations for the introduction of the western extension scheme in early 2007.
- The availability of five years of monitoring data in relation to the original central London congestion charging scheme allows a longer-term perspective on the role of congestion charging.
- In general, charging is seen to have helped accentuate trends that were positive, such as reduced road traffic accidents and emissions; to have helped counteract trends that were negative, such as increasing

congestion; whilst having a broadly neutral impact on general economic performance.

- A cost-benefit analysis of the central London scheme suggests that the identified benefits exceeded the costs of operating the scheme by a ratio of around 1.5 with an £5 charge, and by a ratio of 1.7 with an £8 charge.
72. The initial capital and subsequent revenue costs mean that the Congestion Charging model can only work currently with large urban areas. In the future, should vehicle tracking systems be more widespread and reliable, then it is possible that other vehicle charging schemes could be introduced elsewhere.
 73. The success of the London scheme has already resulted in plans to extend the area over which it operates. Similar schemes are also being looked at in many other UK cities, and Heathrow Airport.
 74. It is not clear how many other transport authorities are pursuing road user pricing although 20 have either put in bids for or already have funds for preliminary studies through the transport innovation fund. Congestion and productivity bids under the transport innovation fund are still being sought by the DfT but a key element must include a commitment to include road user charging.
 75. Before the Council could consider the full impact and viability of road user charging on York it would need firstly to carry out a study by engaging with specialist consultants with both transport and economic knowledge and expertise. It would need to make some fundamental decisions about the approach it wished to take regards a cost neutral or investment scheme. Any investment would be linked to travel and could include new infrastructure such as roads or new public transport services. A significant amount of transport modelling would be required together with the development of an economic model for each of the various scenarios. The Council would also need to evaluate the different measures for applying the charge be it either zonal or cordon as well as collection and payment mechanisms.
 76. There are many instances of road user charging throughout the world that can demonstrate the benefits that contribute towards addressing the issue of traffic congestion. The Institute for Transport Studies, University of Leeds have a web site that gives full details within its Policy Guidebook.
 77. The table below notes some of the features of the potential demand management techniques. It should be noted that these have been derived on a subjective basis and for a full rigorous objective analysis, a substantial amount of research is required.

Measure	Strengths	Weaknesses	Opportunities	Threats
Road User	The efficiency	Only a limited	This technology	A National

Measure	Strengths	Weaknesses	Opportunities	Threats
Charging (RUC)	<p>and accuracy of the technology is now proven.</p> <p>The positive effects on traffic restraint are proven.</p> <p>This kind of demand management measure is currently looked upon favourably by the Department of Transport.</p>	<p>application within the UK thus far.</p> <p>The “back office” and infrastructure costs are substantial.</p> <p>This measure may be very unpopular with motorists.</p> <p>Implementation could take a substantial time from conception to implementation.</p> <p>Penalises the less wealthy motorist.</p> <p>The placement of the cordon or screen lines for charging may have differential effects on different Council wards.</p>	<p>could be very effective in restricting access in the City Centre and key radials.</p> <p>The income generated could support other transport measures.</p> <p>Dependent upon the “success” of the RUC, the resultant capacity release in the City Centre could be used to benefit other road users.</p> <p>Once implemented, the charge level can be modified to support other policies.</p>	<p>system might make the technology redundant (abortive costs).</p> <p>The redistribution of traffic could cause unexpected problems elsewhere.</p> <p>Could fall out of favour with the Department for Transport.</p> <p>RUC is not within the current LTP strategies which have been agreed to by the Department for Transport.</p> <p>May deter visitors coming to York.</p>
Car Parking Charges	<p>Quick and relatively simple to implement.</p> <p>The various time and charge regimes can be varied quickly and easily.</p> <p>Consistent with the current integrated transport policy.</p>	<p>This measure may be very unpopular with motorists.</p> <p>Penalises the less wealthy motorist.</p>		
Work Place parking charging	<p>Will target motorists who could use other modes of transport to access York.</p> <p>Will not deter visitors from coming into York by car.</p>	<p>Will be difficult and slow to implement.</p> <p>Will not deter motorists crossing the city from within.</p> <p>Will not deter visitors coming</p>		<p>Legislation could change to make this measure unsustainable.</p>

Measure	Strengths	Weaknesses	Opportunities	Threats
		<p>into York by car.</p> <p>Effects are not fully proven.</p> <p>Penalises the less wealthy motorist/business.</p>		
Work place parking levels	<p>Is consistent with the current integrated transport policies.</p>	<p>Must be enforced at the outset if difficulties over time are not to be experienced.</p> <p>Will not deter motorists crossing the city from within.</p> <p>Will not deter visitors coming into York by car.</p>	<p>Restrictions on new developments can be part of planning conditions.</p>	
Access restraint	<p>Can be self enforcing.</p> <p>Is consistent with current integrated transport policies.</p> <p>Can work in conjunction with other measures.</p> <p>Is not socially divisive.</p>	<p>The negative effects of traffic redistribution might not be predictable with wide scale implementation across York.</p>	<p>Relatively quick and easy to introduce.</p>	
Bus Priority measures	<p>Is completely consistent with current integrated transport policies.</p> <p>Can work in conjunction with other measures.</p>	<p>Buses can compete for priority with each other.</p> <p>The technology is complex and requires specialist knowledge within the Council.</p>	<p>The base infrastructure is already present and new sites can be introduced quickly.</p> <p>The capital programme already has these measures included.</p>	<p>A change in bus operators could reduce the effect of this measure.</p>
Use of out of town freight depots		<p>The volume of HGVs on York's roads is not high so this measure would not have a great effect on</p>	<p>Air quality improvements would be likely to occur.</p>	

Measure	Strengths	Weaknesses	Opportunities	Threats
		congestion.		

Development Impact

78. Like most other urban locations, there is a continual change in actual and potential land use in York. Every change has a resultant consequence for the transport networks. Many changes to land use are small and can easily be accommodated into the general mix of daily variability of traffic demand. However, when a large scale site becomes available for development or significant change of use, it is necessary to assess the impact on the transport networks in addition to other changes which will occur.
79. The positive and potentially negative effects of land use development present some difficult dilemmas for Local Authorities. Usually, the development of land brings the opportunity for new jobs, housing or an improvement in the quality of that land. However, with the change in characteristic, there is usually an increase in the traffic generated and attracted. Where sites are large, the impact on the transport networks can be extensive, requiring modifications of the highway network and public transport services.
80. In York, there are some major land development proposals at various stages of planning including York Central, British Sugar, Nestles and the Terry's site. Individually any one of these sites would have a significant impact on the local transport infrastructure with city-wide effects. When taken together, there could be a major change in the city's travel patterns and demand for transport infrastructure.
81. To assess the impact that new development has upon the road and transport networks the Council maintains a multi modal model that combines both traffic and transport elements. Also within the model are the projected new developments and the infrastructure improvements expected to be delivered either through the current LTP and its successors as well as any additional infrastructure delivered through major scheme bids such as Access York or through developer led initiatives.
82. This model allows different development scenarios to be tested at both a macro and micro level. It is against this model that new developments can be assessed to identify their impact upon the road network which is very much driven by the type and content and extent of the development proposal.
83. Each developer will submit transport assessments and proposals for agreement, which will identify the improvements which will be required to support the land use changes. Improvements to local junctions and public transport services are likely, but also, through Section 106 (S106) agreements,

funds can be made available to the Council for general betterment of transport services which could be remote from the immediate development site, thus giving the opportunity for the delivery of cycle or walking schemes, part funded from a variety of sources, S106 as well as LTP monies. As well as infrastructure proposals we would be seeking further initiatives in the form of sustainable travel planning that includes cycling, walking and public transport proposals.

84. The Local Development Framework is currently in the development stage of the preferred options for the Core Strategy with the Key Allocations DPD at the issues and options stage. In addition the Regional Spatial Strategy is due for review over the next two years and there is a need for the Council to have a sub-regional transport strategy to support those documents and reviews. The sub-regional transport strategy, the local transport plan and the Council's multi-modal model will then provide the evidence and support for planning and development issues into the future.
85. The Council is currently commissioning a sub-regional transport strategy which will be informed by the development of a strategic matrix tool linked to development scenarios for the city and the resultant infrastructure requirements. The diagram in Annex 1 shows how each of the various elements combine together.

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Report Approved Date

Report Approved Date Insert Date

Wards Affected: List wards or tick box to indicate all

All

For further information please contact the author of the report

Background Papers:

City of York Local Transport Plan 2006 – 2011
Road Pricing: The Next Steps
Road User Charging – Nottingham University
Transport for London 5th Annual Report – July 2007
Institute for Transport Studies, Leeds University, Policy Guidebook

Annexes

Annex 1 – Transport/Land Use Framework

21th February 2008

Annex 1

TRANSPORT/LAND USE FRAMEWORK

