KING'S LYNN 2nd LOCAL TRANSPORT PLAN

2nd Draft – 2nd June 2005
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(Amended following 2nd stakeholder workshop and discussions with KLWNBC and NCC officers)

Contents

1. Introduction and Context

This LTP for the town of King's Lynn is part of the LTP for Norfolk, and should be read in the context of the overall aims, objectives and strategies for the county as a whole. It proposes specific measures for the town, based on locally-determined requirements and priorities.

An important requirement is to tackle the transport impacts of planned population and employment growth. A second and equally important requirement is to ensure that transport changes support the Urban Renaissance Strategy for King's Lynn.

The growth requirement for the Borough of King's Lynn & West Norfolk is to accommodate 11,000 new homes between 2001 and 2021. The Borough aims to accommodate 75% of new homes in King's Lynn itself. While this adds to the transport pressures, it nevertheless provides opportunities to deal with them in a more sustainable way, as explained later in this document.

Some assumptions have been made for the purposes of this LTP regarding the growth and distribution of population in King's Lynn. Further studies are being undertaken that will inform decisions on the plan for the future. Overall, the town population is likely to grow by over one third in fifteen years, and so the LTP needs to address future demand for travel as well as finding solutions to problems as they exist today.

This LTP therefore has a double purpose:

- To address the accessibility, congestion, environment and safety issues of the town as it stands; and
- To address the additional issues and transport pressures arising from the projected level of population and associated employment growth.

2. Vision for King's Lynn

Within the overall vision for the County, King's Lynn has its own vision for transport and travel, derived from local consultation and discussion. The Borough's Transport Policy Statement provides the following objectives:

1. Seamless integration of transport modes
2. Excellent national and regional connections
3. Accessible rural areas through good links between towns and surrounding villages
4. Good urban transport networks
5. Provision of information

The vision for King's Lynn also relates to the Regional Spatial Strategy for the East of England, which designates King's Lynn as a regional interchange centre requiring "an improved range of public transport provision to, from and within" should be provided to "improve accessibility and support the economic and spatial development of the region" (RSS14, policy SS6, November 2004).

This LTP is primarily concerned with travel to, from and within King's Lynn itself. The issue of regional connections is dealt with in the LTP for the County. However, it is important that proposals for the town are consistent with the wider travel agenda. Regional transport strategy policies pertinent to King's Lynn and its wider sub regional role include:

- Enable infrastructure programmes and transport service provision to support both existing development (addressing problems of congestion) and that proposed in the spatial strategy (economic regeneration needs and further housing growth) (Policy T1);
- Widen travel choice: increasing and promoting opportunities for travel by means other than the private car, particularly walking, cycling and public transport, improving seamless travel through the provision of quality interchange facilities and raising travel awareness (Policy T1)
- Reduce the need to travel (Policy T1);
- A significantly enhanced level of public transport service provision to, from and within the Regional Interchange Centres (Policy T2 and T7);
- Walking and cycling will be encouraged and provision for both will be improved (Policy T12);
- Within King's Lynn, a target of quarter-hourly service during day for 90% of households/jobs plus half-hourly evening services (Policy T13);
- Stabilise traffic growth in King's Lynn (Policy T14);
- Parking provision for commercial land uses to be 70% of the maximum after Policy T14 is achieved (Policy T16).

The King's Lynn LTP sets transport in the wider context of social, economic and physical development of the town. It has been prepared in conjunction with the emerging Urban Renaissance Strategy for King's Lynn. The town will be growing substantially over the next 15-20 years and the vision is for transport and travel to be adapted so that the quality and diversity of the town is enhanced. A further part of the vision is for King's Lynn to play a bigger role in the sub region. To do this the town will need to have both a wider range of employment, services and facilities, and a transport system that provides for the access requirements in ways that are more socially inclusive and environmentally sustainable than at present.

The vision is for a town with a vibrant and economically successful centre that is less dominated by traffic and parking, and that attracts a wider range of activities and users. This requires a transport system that caters for access and movement with less environmental impact, and that provides a quality travel experience for everyone, whichever mode of travel they use.

Specific aspects of the vision are for:

- Housing and employment growth to take place in ways and locations that minimise the need to travel, especially by car;
- People in and around King's Lynn to meet their travel needs in a more sustainable and also physically active way, with walking and cycling both becoming part of the "travel culture" of the town;
- A reliable bus service with high quality vehicles, facilities and information, enabled with a high degree of priority on the street network;
- A lively town centre with a strong evening economy that is accessible to everyone in the town's catchment area, with evening bus services, and cycle and footpaths and car parks that are safe to use;
- Streets and spaces that are less dominated by traffic than they are today, in terms of both their design and their use;
- Regional transport links to King's Lynn that provide alternatives modes of travel that are attractive to use and choose, and which minimise the environmental and traffic impact on the town itself;
- A more equitable transport system that enables people from all backgrounds to play an active part in community life and able to access key opportunities and services such as jobs, education, healthcare and leisure;
- A transport system that uses less non-renewable energy, and causes less noise and air pollution and severance of communities compared to today.
- A smaller proportion of trips being undertaken by private car, and less traffic in particularly sensitive parts of the road network;
- High quality information that removes barriers to the choice of environmentally favourable modes, and helps to minimize unnecessary use of the road network;
- Streets and roads that support calm styles of driving and that are free of persistent delays;

- People in communities to be, and feel, safer whilst using roads, public transport and pavements; and
- A transport network that is managed on the basis of accessibility for goods and people, rather than just vehicles, so that modes with the least impact are given priority over those modes that have the biggest impact.

3. Objectives and targets

Countywide targets have been set for Norfolk. They include objectives relating to the four priority areas shared between central and local Government. These are:

- Congestion
- Accessibility
- Safety
- Air quality

The following additional measurable objectives and targets are put forward in this document for King's Lynn.

1. Motor traffic at the King's Lynn cordon to be no higher in 2010, or 2021 than it was in 2004
2. Motor traffic crossing a town centre screenline (between the station and the river, monitoring to be established) to be no higher in 2010, or 2021 than it was in 2004
3. Bus fares within the town to be no higher than the cost of town centre parking for three hours by 2007 (to be achieved by revision of parking charges if necessary)
4. All locations within the main built up area of King's Lynn to be accessible to each other by bus within 50 minutes door to door by 2010 (new monitoring requirement)
5. 90% of buses to run within 3 minutes of the published timetables by 2009 (partnership with operators required)
6. Air quality in the designated AQMA area to meet national targets by 2010
7. Contribution to County-wide road casualty reduction targets: 2010 averages compared to 1994-98 averages to be reduced: Child KSI by 50%, Road Users KSI by 40%, and Road Users slight injuries by 10%.

Targets 1 – 5 contribute either directly or indirectly to the theme of reducing congestion. Targets 3 – 5 relate to improving accessibility especially for those with less choice of mode. Target 6 relates to air quality. No local road safety target is set for King's Lynn and countywide targets will apply.

Achievement of the objectives and targets will hinge critically on the amount of travel by car driver mode. The reliance on this measure needs some explanation:

- The ideal measure would be car kilometres driven within the town, but there are difficulties in acquiring accurate data at reasonable cost. Ideally a robust travel diary survey would periodically be undertaken to monitor trends in mode split of trips and distances traveled. This is unlikely to be justified in the current funding climate.

- Instead, traffic counts should be used as a proxy for the amount of motor vehicle traffic on the King's Lynn road network. The existing cordon count should be supplemented with a screenline count, on the alignment of the railway and continuing from the station to the river. This will monitor the movements between north and south of the town, and the crucial central part of the road network (including the current one-way gyratory system).
- Targets for the share of other modes are avoided but the LTP proposes measures that will improve the attractiveness of all the alternative modes. If motor traffic levels are stabilized or reduced, this will inevitably mean an increase in the use of alternative modes;
- Non-motorised modes (walking and cycling) are the preferred modes from the point of view of personal health. On the other hand if this means that public transport is less well used, this will produce disadvantages for those less able to walk or cycle.
- The non-motorised modes can have lower risks to objectives achievement because their planning is more firmly in the control of the Borough and County Councils;
- It is common for the non car-driver modes to be in competition with each other, and this is not considered beneficial to objectives achievement. For example, when public transport use increases, it is common for much of it to be transferred from car passenger mode, leaving the amount of driving unchanged. Similarly, when an increased proportion of trips are made by cycle, much of the switch is likely to come from public transport, or walking, or car passenger. Again, there is little benefit in terms of objective achievement.

Achievement of road casualty reduction targets is judged to be influenced primarily by traffic and highway management, including speed management, rather than by traffic levels. The proposed lower speed limit for the town is aimed at road casualty reduction as well as more efficient traffic flow and reduced emissions.

4. Current trends - Prognosis for 2021

The prognosis for King's Lynn in terms of meeting the four key shared priorities raises some serious concerns. This section demonstrates how, without specific interventions including those contained in this LTP, King's Lynn will experience deteriorating traffic and environmental conditions, which in turn would undermine the aims of the Urban Renaissance Strategy, and the goal of sustainable growth.

4.1 Traffic growth

Traffic growth has been substantial over recent decades. Recorded traffic at the King's Lynn cordon show an average annual increase of around 0.9% from 1988. with today's volumes about 16% higher than 16 years ago. Although lower traffic growth has been recorded in the most recent cordon counts, strong growth can be expected in the future for the following reasons:

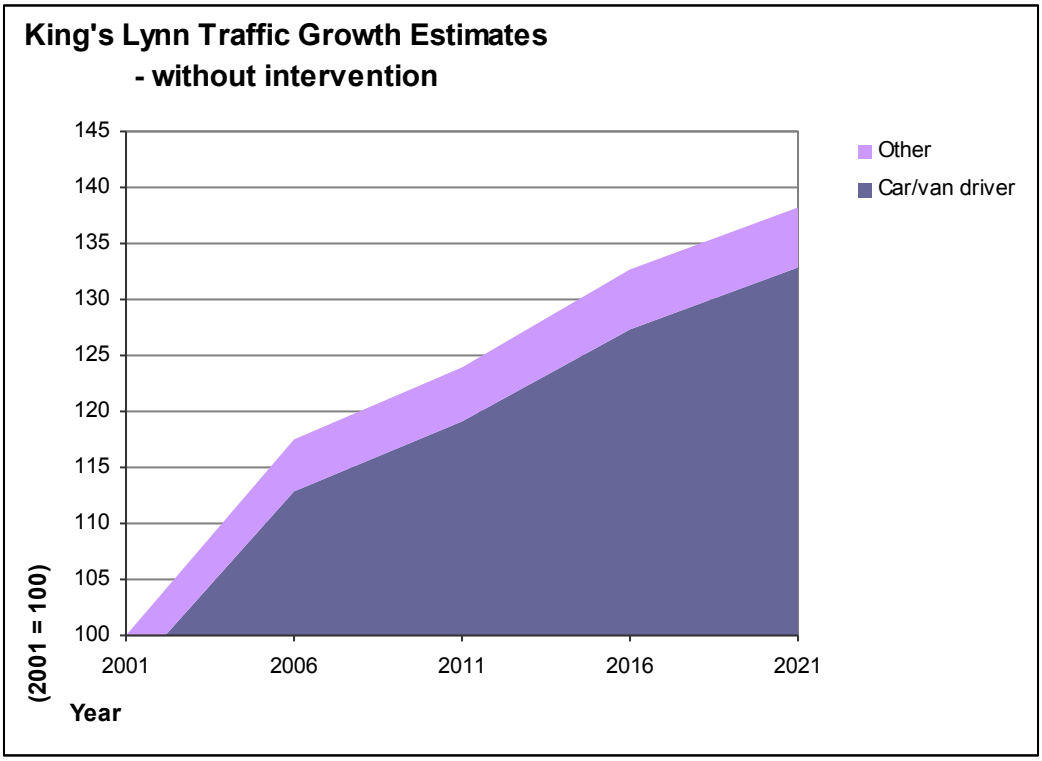
- Planned and expected population and employment growth in the town (producing roundly a 25% growth in the number of trips between 2001 and 2021);
- Aimed-for expansion of the role of the town centre, and a consequential increase in the number of people coming to the town for shopping, services, and tourism. A figure cannot be put on this category of traffic growth;
- There is a strong relationship between levels of car ownership and levels of car use. Car ownership levels are likely to increase amongst the existing population, if the aimed-for strengthening of the economy and raising of income levels occurs. Car ownership levels of the incoming population will be higher than existing levels as a result of encouraging immigration by people with higher income levels than the present average. (See Annex A)

A further factor that would exacerbate traffic growth if not checked would be planning permission for further development that encouraged car use. The particular threat would arise from retail, education, leisure and intensive employment uses being developed where they cannot easily be served by public transport, or on foot or by cycle. Locating such facilities where they can reasonably only be reached by car also works against the objective of accessibility for all and social inclusion.

The consequence of these factors is a potential for strong traffic growth unless specific interventions are made to alter trends, such as those included in this LTP. "Unconstrained" traffic growth could mean that by 2021 traffic volumes could increase by 35% compared to 2001. Such an increase may be unlikely without further increases in road capacity and town centre parking places, but

congestion and environmental conditions would nevertheless continue to deteriorate as the network struggles to cope.

Parts of the road network in King's Lynn already experience significant delays and these could be expected to worsen if the traffic growth trend continues unchecked, causing further disruption and environmental damage. In particular, it will be increasingly difficult to provide for high quality alternatives to the car, thus exacerbating the vicious spiral of increasing dependence on cars, worsening congestion, and poorer conditions for walking, cycling and public transport.



4.2 Modal split

Journey to work

Journey to work figures (from the 2001 Census) suggest that compared to towns of similar size nationally (from National Travel Survey), the walking and cycling mode shares are higher than the average. The walking share is 30% higher than the average, while cycling is 66% higher. Public transport use, apparently, is more than a third lower than the average for towns the size of King's Lynn (5.4% compared to 8.5% nationally). It is not uncommon to find lower bus use alongside higher than average walking and cycling. Commuters as car drivers form the same proportion as nationally, but as car passengers is somewhat lower. Again,

lower car occupancy rates are to be expected where walking and cycling have a larger mode share. In any case, car is by far the dominant mode for commuting with over 70% going to work by car, compared to 75% nationally.

The trends currently are going in the opposite direction from that required to meet the objectives. The mode share for walking and cycling both declined between 1991 and 2001, from a combined total of 32% of work trips to 23%. The car driver mode share as a result increased from 52% to 61%.

All trips

There are no reliable local mode split data for all trips. Estimates of bus use suggest that the bus mode share for all trips in King's Lynn is 3-4%. The small sample survey puts the figure at 8%, which is more in line with the 7% national average for similar-sized towns. Further surveys would be required to establish the true figure.

Table 1 Journey to work mode split (resident population of King's Lynn)

Mode	1991 census	2001 census	2002 small sample	Nationally towns of 25-50,000 population 2002-2004
Walk	18	13	10	10
Cycle	14	10	7	6
Public transport	4	5	2	8
Car passenger	9	9	81	14
Car driver/MC	52	61		61
Total %	97	99	100	99

Sources: 1991 and 2001 national census, 2002-2004 National Travel Survey special tabulations
The 2002 has too small a sample to be relied on

Table 2 Mode split for all trips (resident population of King's Lynn)

Mode		2002 small sample	Nationally towns of 25-50,000 population 2002-2004
Walk		14	25
Cycle		5	3
Public transport		8	7
Car passenger		73	23
Car driver/MC			42
Total %		100	100

Sources: Small sample survey of King's Lynn residents 2002, and 2002-2004 National Travel Survey special tabulations

Table 3 Example of mode split target outcome 2021

	Trips per person per year	%
Walk	275	27
Car/van driver	335	33
Car/van passenger	175	17
Cycle	125	12
Stage bus	80	8
Rail	15	1
Other public	15	1
Grand Total	1015	100

In the scenario shown in Table 3 above, total trips by car by the resident population would amount to 50% of the total, made up of 33% car driver and 17% car passenger. The car driver share would be 10 percentage points below the current figure nationally, requiring a substantial mode shift away from the car to be picked up by the other modes. Both cycle and bus use would double. Rail use would be 50% more than today. Although we have little data on current walking activity, it would be brought into line with the comparable national average for small towns.

5. Strategy outline

There are 17 measures (or groups of measures) recommended in the LTP strategy for King's Lynn. Ten of these require capital funding over the next five years through the LTP and associated sources of funding. These measures are summarised in Table 5. This section provides an outline of the strategy and individual measures, and the reasoning behind them.

5.1 An integrated package of measures

The strategy contains a number of schemes and projects, and will be supported by a number of important policy and management measures. These different elements are designed as a package and need to be considered together. The strategy aims to integrate:

- Management of supply and demand (see below)
- All modes
- Short and longer distance travel
- Transport and land use
- Transport and wider aspects of the town

5.2 The opportunity of town growth

The plan to focus 75% of the Borough's growth in King's Lynn itself is consistent with the objectives for transport and environment. It provides greater potential for more sustainable patterns of development and travel, including in particular less reliance on cars. Compact forms of development also create the potential for people to choose alternatives to the car, and for those alternative modes to be well provided.

It is therefore logical to shape transport policies and interventions to exploit this potential.

5.3 Transport strategy elements

The strategy relies heavily on the concept of demand management. It rejects as damaging and unworkable the alternative of simply attempting to respond to changes in demand as and when they occur (e.g. traffic increasing, walking and cycling decreasing, bus services becoming less relevant to the spatial pattern of activity, development proposals that encourage car use). Some further explanation of the demand management strategy is outlined below. This influences and provides a context for the individual measures described in more detail in the next section.

5.4 Demand Management

The previous section demonstrated the major challenge that faces King's Lynn in reconciling economic and physical growth with enhancement of quality of life and quality of the environment in the town.

The target is to achieve town growth with no overall growth in traffic. This requires that the number of car kilometers driven per person will have to be reduced. This is a very challenging target and there is no known precedent for it in the UK. Management of travel demand to achieve this will include "push" and "pull" and "soft" measures. These are summarised below.

5.4.1 Push methods

- Parking supply, pricing and control
- Traffic management priorities, including bus priority and road space reallocation in favour of cyclists and those on foot.
- Speed management, including lower traffic speeds within King's Lynn

5.4.2 Pull methods

- Improve bus services within and to and from King's Lynn, in particular by providing protection from delays and congestion wherever and whenever needed throughout the entire bus network;
- Negotiate bus services and route improvements with operators once priority measures are agreed. Possible restructuring measures and improvements are set out in Annex F;
- Complete the cycle network by fixing the "missing links" and providing cycle parking facilities at all destinations, and vigorously promote the use of cycles. Priority is to be provided over motor traffic at junctions, and segregation from footways and footpaths;
- Improve and promote the use of walking facilities, in particular reducing the severance and unpleasantness presented by major traffic flows and car parks;
- Investigate the role and feasibility of Park and Ride facilities to intercept regional and rural traffic; assuming less and/or more expensive parking is introduced in the town centre, and a priority public transport link connects the Park and Ride site to the town centre;
- Other traffic management measures that will potentially reduce traffic or avoid traffic arising from new development include the introduction of signed "Parking Routes", and residents' parking control schemes.
- Town planning measures should include lower levels of parking provision in new developments, and active encouragement of conversion of private non-residential car parking to more productive and less traffic-generating uses, including conversion to residents' parking;
- Town planning measures should be used to ensure that trip-attracting developments occur only on sites that have good "inbound" accessibility by public transport, cycling and walking.

5.4.3 Soft measures

"Soft measures" will be introduced following the network and structural improvements proposed in the LTP:

- Travel Plans for the Council and other major employers (a priority for implementation in the short term)
- Travel Plans for schools and health facilities
- Personalised travel planning ("smart choices")

Further options will be considered but do not form part of this LTP submission:

- Car clubs
- Car sharing (considered an option for rural parts of the Borough)

5.5 Strategy components

The strategy has the following key elements, which provide the headings for analysis and appraisal later in the document:

1. Provide a step change improvement in cycling facilities throughout the town;
2. Reduce barriers to walking at key locations, especially to re-integrate the town centre with its hinterland;
3. Revision of land use planning in line with current policy and best practice;
4. Focus town centre parking in fewer locations to reduce traffic impacts;
5. Introduce a parking route system to minimise unnecessary mileage;
6. Set the town centre parking tariff to compare with bus fares, and to discourage both very short and all-day use;
7. Provide priority for buses over other traffic sufficient to enable reliable high quality services in partnership with operators;
8. Bus service restructuring in partnership with operators (dependent on implementation of 7)
9. Introduce linked traffic signals at junctions to create a series of "traffic flow control valves" – this is an innovative scheme for experimentation;
10. Remove one-way operation of town centre ring route, and construct an improved road link between Littleport Street and Railway Road (widening and/or realignment of Austyin Street (east) in the vicinity of Austin Fields industrial estate);
11. Adopt a "safe speed" management of the road network, with 20mph as the limit in the town centre area, and in the vicinity of schools, playgrounds and park entrances;
12. Extend the range and scope of Travel Plans in the town, starting with the Borough Council;

13. Run a concerted campaign to promote walking and cycling, with targeted and individual marketing;
14. Negotiate for better rail connections at Ely;
15. Investigate the feasibility of a Park and Ride facility in the south of the town, covering in particular the need for constraint on town centre parking, the need for a priority public transport link into the town centre, and the issue of which user groups would be served;
16. Keep a watching brief on the possibility of providing a Parkway station on the King's Lynn railway line to reinforce regional connections by rail;
17. Integrate development and regeneration opportunities in and around the town centre with the proposed traffic and transport changes.

Not all of these measures require significant investment, and not all need to be implemented in the short term. The funding and phasing requirements are shown in Table 5.

The 16 measures can be grouped as follows:

- Measures to switch a proportion of trips to non-motorised modes (measures 1,2,3,10,11,12,13)
- Measures to get more rational parking provision and access in the town centre (measures 4,5,6)
- Measures to increase the role of bus travel (measures 7,8,9,10)
- Measures to achieve safer and more efficient traffic flow (measures 5,9,10,11)
- Measures to reduce the need to travel, especially by car (measures 3,5,14,15,16,17)
- Measures to get better regional and rural links, and better integration with town transport (measures 6,7,8, 14,15,16)
- Measures to create or support development opportunities in King's Lynn (measures 2,3,4,10,17).

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6. Proposed transport measures

This section provides more detail on the package of measures proposed.

6.1 Enhanced cycling facilities and promotion

The strategy proposes mode switch to from car to cycling as having a key role in resolving the linked issues of town growth, town quality, and accessibility. The justification relates to the following considerations:

- The existence of a substantial network of safe cycle routes in King's Lynn;
- Low density and dispersed patterns of employment and other activity making the town difficult to service by quality public transport;
- The substantial existing cycle path network on which to build;
- Flat terrain;
- The ready availability of bicycles to a wide spectrum of the population, enabling accessibility objectives to be fulfilled.

The LTP proposes to enhance further the cycle network in the town, and to capitalize on the investment already made by a major promotion of cycling.

It is proposed to focus resources on the promotion of cycling, including raising awareness of the facilities available and the personal advantages of choosing this mode for day to day as well as leisure travel. It is hoped to be able to use King's Lynn to demonstrate what can be achieved through a prudent mix of targeted physical improvements and a major promotional effort. A key objective will be to enhance the image and acceptance of cycling as a popular mode of travel. A programme of promotion will be identified including Travel Plans, School projects and targeted awareness campaigns.

Physical measures will involve completing the core network, overcoming barriers at key points in the network, and providing secure cycle parking facilities:

- Completing traffic-free links and reallocation of roadspace to provide segregated lanes at busy locations;
- Remove severance between town centre and approach routes: measures to be identified as part of AWTMS;
- Enhance direct links between areas of low car ownership and areas with employment, health, education and shopping facilities. A programme of improvements will be identified;
- Enhance connections to destinations such as Gaywood local centre, supermarkets and the hospital, as well as the town centre;
- Removal of cycle use of footways;
- Programme of cycle parking provision at destinations to be identified;
- Ensure adequate provision of cycle storage in all new housing developments.

6.2 Parking demand management

Management of the parking supply and operation in the town centre is critical to the outcome traffic levels on the network. It is also the main means currently available whereby mode shift from car to alternative modes can be achieved. Park and Ride feasibility also will be determined largely by the extent and price of parking in the town centre.

The strategy will consist of the following parking measures:

- Capping the overall supply of parking in the town centre
- Raising the prices charged (related to the supply of parking and to public transport fares)
- Designing the tariff structure to influence length of stay and to deter very short stay users
- Reducing the number of car parks in the town centre (through redevelopment) and providing parking in a limited number of multi-storey car parks.

This part of the strategy involves capital costs with further multi-storey provision, but this will be recouped in whole or in part either through s106 agreements on the redevelopment sites or from parking revenues, or a mixture of the two.

This measure will be backed up with active encouragement through the planning system for:

- The redevelopment or conversion of private non-residential car parking;
- Negotiating lower levels of parking provision in new development (related to accessibility by other modes); and
- The extension as required of residents' parking control, with decriminalized enforcement.

6.3 Area Wide Traffic Management Scheme

As well as demand management measures, it is proposed to instigate an integrated set of measures coming under the banner of an "Area Wide Traffic Management Scheme (AWTMS). These measures can reduce traffic queues and delays even with current levels of traffic and car use, but would continue to provide benefits of network efficiency when demand management measures take effect in limiting traffic.

The AWTMS scheme will cover the town centre street network and the main approaches to the town centre. It will be designed to serve a range of objectives including:

- Reduced traffic congestion

- Priority for non-car modes
- Better air quality
- Road safety

Traffic congestion is defined here as both delays in traffic queues, and the unpredictability of such delays. If bus travel is to be promoted, both aspects of congestion are critical. Promoting bus use requires the provision of routes and priority measures that enable buses to avoid traffic delays, and in particular to have a guaranteed running time through the road network. Without this, service schedules cannot be met and the main quality attribute required of bus services is undermined.

The AWTMS will include the following features, subject to technical feasibility:

- **Traffic signal controlled traffic "valves"** can be used to relocate traffic queues to locations where they cause less problems, and in particular away from locations where buses need to be given priority. Queue formation can also be tackled by installing speed moderating measures between the signaled junctions (such as narrow lanes, central dividers, removal of centre lines).
  The critical traffic delays occur on the town centre "inner ring" one-way system, and on the three main radial roads into King's Lynn.
- **Bus, cycle and pedestrian priority measures.**
  These will be tailor made to individual sites where priority is required, and will consist of a variety of traffic management techniques.
- **"Parking routes"** will be signed to discourage unnecessary traffic in the town centre.
  Providing information on parking locations and their realtime availability will reduce the amount of "searching traffic". It is designed to discourage unnecessary traffic generated by people who drive to the nearest possible parking space to their destination rather than choosing a parking space nearest to their point of arrival at the town centre. In the short term, parking routes can shorten search times to surface car parks. For example people arriving from the south who choose to drive to a car park in the north of the town centre generate two car trips through the one-way system.
- **Two additional multi-storey car parks to replace surface area car parks.**
  The principle of "Drive To, not Through" can be enhanced by providing high quality parking at locations where the main radial routes reach the town centre. The new multi-storey car park at Regent Way is consistent with this approach. It can supply the parking requirement for vehicles approaching from the south. Further multi storey car parks can be provided on the approach from the north (for example on the Timber Yard site) and for the Gaywood Road approach (for example on a redeveloped Morrisons car park site).
- **Returning Railway Road to two-way traffic.**
  Changing the way in which the road network is managed can assist with

traffic reduction by reducing unnecessary mileage and by allowing priority for buses, cyclists and pedestrians to encourage mode switch. The most important measure (potentially) will be the removal of the one-way system. This could involve making Railway Road two-way for general traffic, freeing up Blackfriars Road (or parts of it) for access traffic (to the railway station, Morrisons, Matalan, etc). St John's Terrace would be converted for buses and cycles only to prevent its use by general traffic. The current cycle path in the Walks alongside St John's Terrace would be removed.
A reduction of peak hour traffic is likely to be needed in order to enable two-way operation, and to meet the air quality target in Railway Road.

6.4 Design principles for the area-wide traffic management scheme (AWTMS)

- Achieve bus priority to provide unfettered running on whole-route basis. This must benefit buses to and from as well as within King's Lynn.
- Ingress and egress routes for buses to and from the bus station, and the railway station;
- Potential bus access to other parts of the town centre;
- Accommodation of new, extended, modified or enhanced bus routes to serve growth areas of the town (dependent on location of growth areas);
- Cycle paths and lanes segregated from both motor traffic and pedestrians;
- Reduced severance of the town centre from its hinterland for pedestrians and cyclists caused by the inner ring route, e.g. by linking the town centre to footpaths and green spaces outside the town centre such as The Walks.
- Reduction of traffic on inner ring route using "Drive to not Through" principle;
- Reduction of air pollution on Railway Road;
- Improved road safety through speed management.

6.5 Issues for future consideration in the context of the AWTMS

- While the bus station should remain in its present location, there is scope to make more efficient use of the site, dependent on securing simpler ingress and egress for buses.
- Bus and cycle route from NORA to town centre. At current rates of public transport use, the housing in NORA may support no more than one bus per hour. An extension of an existing route is likely to prove more effective, for example linking to the hospital.
- The town centre could benefit from a circular bus or "road train" route linking key parts of the centre, and providing a convenience for shoppers as well as an attraction for visitors. This is considered more feasible than extending regular bus routes into the town centre streets.

6.6 Reducing traffic levels

There is only so far that one can go in ameliorating traffic problems without reducing the volume of traffic. At some point the achievement of objectives requires an absolute reduction in traffic volumes (i.e. vehicle kilometres driven). The growth of King's Lynn will mean growth of travel demand. To bring about improvements in the traffic and quality of life indicators it will be necessary to reduce the proportion of travel undertaken by car. This is the crucial aim of both the push and the pull measures described above.

However, the reduction in kilometres driven does not have to be uniform across the network. Reductions in the most congested locations will provide the main opportunities for upgrading the bus, walk and cycle alternatives, even if this is within a scenario of overall continuing traffic growth. A target of zero overall growth could be translated into absolute traffic reductions in key congested locations, and acceptance of some further traffic growth at other locations where less damage would result. This will be regarded as a successful outcome.

6.7 Air Quality Management Area – Railway Road

The Borough has identified an Air Quality Management Area in Railway Road with a possible extension to include London Road. The aim is to reduce NO2 emissions in particular. Railway Road is a critical part of the King's Lynn road network, providing the main link for general traffic between the north and south parts of the town within the by-pass. It will be important to ensure that the AQM measures adopted do not simply result in the relocation of the air quality problem to other equally sensitive locations.

The improvement of air quality will be sought partly through the AWTMS, and partly through the measures to achieve mode-shift from the car and traffic reduction on this part of the network. The traffic management measures of particular relevance are:

- Reducing queues in Railway Road by reducing traffic running speeds so that vehicles spend less time in queues at red signals (conversion from 30mph to 20mph limit with lower speeds enforced with cameras)
- Controlling the flow of traffic approaching Railway Road by implementing signal controlled traffic "valves" on the three main radial roads. This would require as a priority the installation of traffic signals at South Gates
- Provision of parking and incentives to encourage the "Drive To, Not Through" behaviour. This would be aimed at reducing the number of vehicles driving through Railway Road (or Blackfriars Road);
- Potential to convert Railway Road to two-way operation to reduce total kilometres traveled (and to meet other objectives), and to improve the design of the road itself.

6.8 Land use planning decisions

Land use planning policy will be set in line with current best practice to promote sustainable development. The aim is to avoid the need to travel by occupants of new development, especially by car, and to ensure that all developments are easily accessible to everyone.

- Locating new housing near to employment areas e.g. in the south
- Locating new housing within walking distance of the town centre
- Raising densities of new housing to maximise opportunities for walking or public transport access to the town centre and other destinations
- Locating trip-attracting developments only where they are accessible by public transport and on foot.

7. Appraisal of proposed measures

The section provides in tabular form an outline appraisal of the proposed measures against the Department for Transport's WEBTAG criteria. The contribution to these broad objectives is shown in terms of "positive", "neutral" or "negative"

Table 3 WEBTAG appraisal of proposed measures

Measure	Environment	Safety	Accessibility	Economy	Integration
1. Provide a step change improvement in cycling facilities throughout the town	Neutral	Not known	Very positive	Positive	Positive
2. Reduce barriers to walking at key locations, especially to re-integrate the town centre with its hinterland	Positive	Positive	Very positive	Positive	Positive
3. Revision of land use planning in line with current policy and best practice	Positive	Neutral	Very positive	Positive	Positive
4. Focus town centre parking in fewer locations to reduce traffic impacts	Very positive	Positive	Positive	Neutral	Neutral
5. Introduce a parking route system to minimise unnecessary mileage	Positive	Positive	Positive	Positive	Positive
6. Set the town centre parking tariff to compare with bus fares, and to discourage both very short and all-day use	Positive	Neutral	Positive	Not known	Positive
7. Provide priority for buses over other traffic sufficient to enable reliable high quality services in partnership with operators	Positive	Neutral	Positive	Positive	Neutral
8. Bus service restructuring in partnership with operators	Positive	Neutral	Positive	Positive	Very Positive

9. Introduce linked traffic signals at junctions to create a series of “traffic flow control valves” – this is an innovative scheme for experimentation	Positive	Not known	Neutral	Neutral	Positive
10. Remove one-way operation of town centre ring route. Improved link at Austin Street (east)	Positive	Not known	Neutral	Neutral	Positive
11. “Safe speed” management of the road network, with 20mph as the limit in the built up area	Positive	Very positive	Neutral	Neutral	Neutral
12. Extend the range and scope of Travel Plans in the town, starting with the Borough Council	Positive	Not known	Neutral	Neutral	Positive
13. Run a concerted campaign to promote walking and cycling, with targeted and individual marketing	Positive	Not known	Neutral	Neutral	Positive
14. Negotiate for better rail connections at Ely	Neutral	Neutral	Positive	Positive	Positive
15. Study feasibility of a Park and Ride facility in the south of the town	Uncertain	Uncertain	Uncertain	Potentially positive	Potentially positive
16. Longer term Parkway station	Uncertain	Not known	Not known	Not known	Positive
17. Integrate development in and around town centre with transport changes.	Positive	Neutral	Positive	Not known	Positive

Notes to table

1. “Accessibility” is interpreted as being by people, not by vehicle, and includes the social inclusion objective
2. “Environment” positive contributions include environmental improvement in the town centre enabled through traffic reduction or mode shift
3. “Integration” is interpreted as both between modes of travel, and between transport and other aspects of the town.

Table 4 appraises the proposed measures against the key objectives and targets identified for the LTP. The symbols used denote positive (+), neutral (0), and negative (-). Double symbol denotes very positive or negative.

Table 4 Appraisal of proposed measures against local LTP objectives

Measure	Reduce car dependence	Healthy travel	Vibrant town centre	Better streets	Regional links	Equitable transport	Less pollution	Less traffic	Good information	Less delays	Safer transport	Accessibility
1. Provide a step change improvement in cycling facilities throughout the town	++	++	+	+	0	++	+	+	0	+	+	++
2. Reduce barriers to walking at key locations, especially to re-integrate the town centre with its hinterland	+	++	++	++	0	++	+	+	0	0	+	++
3. Revision of land use planning in line with current policy and best practice	++	+	++	+	0	+	+	+	0	0	0	+
4. Focus town centre parking in fewer locations to reduce traffic impacts	0	0	++	++	0	0	+	+	0	0	0	-
5. Introduce a parking route system to minimise unnecessary mileage	0	0	+	+	+	0	+	+	+	+	0	+
6. Set the town centre parking tariff to compare with bus fares, and to discourage both very short and all-day use	0	+	0	0	0	++	+	+	0	+	0	0
7. Provide priority for buses over other traffic sufficient to enable reliable high quality services in partnership with operators	+	0	+	0	+	++	+	+	0	+/-	0	+
8. Bus service restructuring in partnership with operators	++	+	++	0	++	+	+	+	+	+/-	0	++
9. Introduce linked traffic signals at junctions to create a series of “traffic flow control valves” – this is an innovative scheme for experimentation	0	0	0	+	0	0	+		0	0/-	+	0
10. Remove one-way operation of town centre ring route. Potential new road link at Austin Fields	0	0	+	+	+/-	0	+	+	0	0/-	+/-	0
11. “Safe speed” management of the road network, with 20mph as the limit in the built up area	0	+	0	+	-	+	+	0	0	+	++	0
12. Extend the range and scope of Travel Plans in the town, starting with the Borough Council	+	+	0	0	0	0	0	+	+	0	0	0
13. Run a concerted campaign to promote walking and cycling, with targeted and individual marketing	+	++	+	+	-	+	+	+	+	0	+/-	0
14. Negotiate for better rail connections at Ely	+	0	0	0	+	0	0	+	0	+	0	+
15. Investigate the feasibility of a Park and Ride facility in the south of the town	-	d/k	+	+	+	d/k	+*	+*	0	+*	d/k	d/k
16. Longer term Parkway station	-	-	0	0	+	-	d/k	d/k	0	d/k	0	d/k
17. Integrate development in and around town centre with transport changes.	++	+	++	+	0	+	+	+	0	0	0	+

* Impact in town only, not necessarily overall

8. Implementation Plan

This section provides an outline plan for the implementation of the proposed measures. Table 5 provides a summary of the measures and the main funding mechanism and broad timescale. Some key aspects of implementation are set out below.

8.1 Cycling measures

The strategy places emphasis on increasing the amount of cycling as a key change of direction for transport in King's Lynn. Apart from the synergy of cycling with the characteristics of the town (as already described), the implementation and promotion of cycling improvements carries a relatively low level of risk in terms of delivery:

- Network and parking facility improvements are relatively low cost;
- The provision of facilities lies within the responsibilities of the Borough and County Council's and, unlike the delivery of public transport improvements, is not heavily dependent on other agencies.

8.2 The AWTMS demonstration project

The 2nd Local Transport Plan provides the main funding vehicle for this important measure. It consists of a variety of separate but closely related measures, and will be designed to meet a range of objectives. The initial task will therefore consist of a technical study to establish the efficacy and value for money aspects of the components of the AWTMS.

The AWTMS is put forward as a demonstration project, and worthy of special funding. The special feature is the use of comprehensive and integrated traffic management as a means of delivering mode shift. Within the package of measures there are techniques to be tested that are relatively untested in an environment such as King's Lynn, including the Parking Route concept, the "Drive to not Through" concept, and the "Traffic Valve" concept.

Research and monitoring mechanisms will need to be established alongside the design and implementation of the measures themselves, and special funds will be required. If successful, the approach would be of great potential value to other similar towns.

8.3 Bus service restructuring

The implementation of bus service improvements will require a partnership approach between the private sector operators, and the Borough and County Councils. Part of the implementation programme will be the provision of good operating conditions on the road network, and this is wholly within the

responsibility of the Borough and particularly the County Council as highway and transport authority. The implementation of bus priority measures will be a precursor to the more comprehensive restructuring and improvement of the bus system.

A strong commitment from the Councils to the Quality Bus Partnership approach is required as a basis for engaging the operators in the necessary planning process. However, there is no guarantee that operators will join with the process, or commit resources to it. As a result the improvement of bus services is seen as an important but nonetheless high risk part of the LTP strategy. It may not be possible to complete the process through to implementation within the 5 year LTP period.

8.4 Monitoring

The measures proposed in this LTP are designed to meet the specified objectives. The full strategy is linked with the longer term objectives for the town as a whole that will be part of the wider Urban Renaissance Strategy. In particular it will be tailored to fit with the plans for major urban growth.

The traffic target in particular is designed to resolve the issue of town growth without traffic growth. It is not possible to provide any worthwhile prediction of the outcome traffic levels or mode split over any particular period because there are too many variables involved. But the trends can be monitored and the direction and strength of recorded changes will inform the programme of implementation, its timing, and if necessary its adjustment.

Other aspects of the strategy will need their own monitoring exercises. Continuation of the cordon and cycle network traffic counts will be important. The addition of a screen line along the line of the railway and extending from the railway station to the river will provide a valuable addition, as it will monitor the critical section of the road network and Railway Road and Blackfriars Road. This will be relevant also to monitoring the achievement of air quality targets in the Railway Road AQMA. Other indicators of key importance are bus service reliability and satisfaction.

Travel Plans will need to incorporate monitoring as part of the requirement, as will Transport Assessments in relation to new developments.

Table 5 Transport Strategy elements

	Measure	Type	Funding	Time scale
1.	Provide a step change improvement in cycling facilities throughout the town	Network upgrading and new links	Capital projects LTP	Initial 5 year programme
2.	Reduce barriers to walking at key locations, especially to re-integrate the town centre with its hinterland	Network and public realm upgrading, linked to 8 and 9	Capital projects LTP	Within 5 years
3.	Revision of land use planning in line with current policy and best practice	Policy	None	Continuing
4.	Focus town centre parking in fewer locations to reduce traffic impacts	Multi storey car parks. Linked to development	Capital projects LTP/other	0-15 years
5.	Introduce a parking route system to minimise unnecessary mileage	Mostly signing and information	Capital project Linked to 4 LTP	Within 2 years
6.	Set the town centre parking tariff to compare with bus fares, and to discourage both very short and all-day use	Management decisions	None	Continuing
7.	Provide priority for buses over other traffic sufficient to enable reliable high quality services in partnership with operators	Traffic management and bus links. Linked to 9	Capital projects LTP	Within 5 years
8.	Bus service restructuring in partnership with operators	Dependent on 7 Frequency, timetable, interchange, vehicles, information, facilities, etc	Capital projects local sources	To follow 7 (expected within 10 years)
9.	Introduce linked traffic signals at junctions to create a series of “traffic flow control valves” – this is an innovative scheme for experimentation	Traffic management. Linked to 7 and 10	Capital projects LTP	Within 5 years
10.	Remove one-way operation of town centre ring route. Potential improved Austin Street (east)	Traffic management Linked to 7 and 8. Possible new road link	Capital project LTP	Within 5 years (road link within 10 years)
11.	“Safe speed” management of the road network, with 20mph as the limit in the built up area	Traffic management	Capital, low cost	Within 5 years

12. Extend the range and scope of Travel Plans in the town, starting with the Borough Council	Promotion and leadership	Local sources/LTP	5 year programme
13. Run a concerted campaign to promote walking and cycling, with targeted and individual marketing	Marketing Linked to 1 and 2	Local sources/LTP	Within 5 years, linked to 1 and 2
14. Negotiate for better rail connections at Ely	Partnership	Rail sources	Short term
15. Investigate the feasibility of a Park and Ride facility in the south of the town with priority route into town centre	Research, and potential scheme	Leading to Capital project LTP	Within 5 years
16. Reserve for longer term the prospect of a new Parkway station to strengthen the role of rail in the sub region	Watching brief	No immediate prospect of funding	10-15 years
17. Integrate development in and around town centre with transport changes.	Policy and design	Capital projects with private sector	Continuing

9. Conclusion

The proposed measures put forward in this LTP provide an appropriate and proportionate response to the challenges facing King's Lynn both at present and with major growth over the next 15 years. Consideration has been given not only to the efficacy of the different measures but also their deliverability. Emphasis has been given to those aspects of the transport system over which the local authorities have most influence.

The measures cover a diverse set of issues, and the measures themselves are diverse in character as a result. However, they are designed to form an integrated package.

Some of the measures proposed are relatively new or innovative and their impacts are less easy to foresee. The programme will therefore be developed on the basis of further technical work, some of which is put forward for funding through the LTP process, or through special status as demonstration projects.

A key element with the King's Lynn LTP is its integration with the development of an Urban Renaissance Strategy for the town. The timing has allowed transport, land use and urban design issues to be developed in parallel, and this process has had a significant influence on the type and extent of measures put forward in the LTP.

Annex A

Land Use and Transport

This annex describes relationships between existing and future land use in Kings Lynn

1. Population assumptions

The following table shows the assumptions about future housing and population levels for the purpose of this LTP

Borough new homes by 2021 (regional planning requirement)	11,000
Built by 2005 (Fact)	1,118
Balance	9,882
75% of balance in King's Lynn (current Borough aspiration)	7,411
Household size (assumed)	2.3
Population housed in additional dwellings in King's Lynn	17,045
Net addition to population in King's Lynn (rough estimate)	15,000
Of which net addition to population within central Ward (rough estimate, assumed average h/h size 1.7)	3,000-5,000

A key aim has already been established to accommodate 75% of the new homes within King's Lynn itself. This has beneficial effects for travel and transport because it means that journeys will be kept relatively short. Also, depending on the location, density and form of the new developments, the opportunity arises to provide good choices for travel on foot, by cycle, and by public transport. This is consistent with the aim to develop in ways that are more sustainable from a transport viewpoint, with less call on energy and land resources, and less negative environmental impacts.

2. Existing land use and accessibility planning

The two main areas of employment in King's Lynn are the town centre and the Hardwick and South Lynn industrial estates, each with roughly 9,000 employees, and comprising between them roughly half of the total employment in the town (the 10 King's Lynn wards). The other main employment area is North Lynn.

The town centre is the most accessible area by non-car modes, and this is reflected in the level of car commuting. Car commuting accounts for 62% of

town centre employees, compared with 70% of South & West Lynn employees. The figures for car drivers are 55% and 63% respectively. From this we can expect that increases in car commuting will be lower if employment is relocated or attracted to the town centre compared to peripheral sites. This illustrates the importance of the PPG6 sequential test.

3. Housing growth

King's Lynn has relatively low rates of car ownership amongst the resident population. Although the Borough as a whole can match the East of England average, the town itself has much lower rates of access to cars. (King's Lynn with 1.1 cars per h/h compared to 1.2 for Norfolk, and 1.3 for East of England).

Car ownership and car commuting levels are closely linked. In King's Lynn the lowest car ownership rates are found in the town centre ward, and as one would expect in the wards with the highest levels of deprivation. The figures are show in cars per household (car driver share of commuting in brackets)

St Margarets with St Nicholas	0.64 cars per h/h (46% car driver to work)
Fairstead	0.87 cars per h/h (56% car driver to work)
Gaywood Chase	0.94 cars per h/h (52% car driver to work)
North Lynn	0.71 cars per h/h (48% car driver to work)

For comparison, peripheral areas have much higher rates of car ownership and use, reflecting both their location and different socio-economic make up. For example:

West Winch	1.5 cars per h/h (83% car driver to work)
North Wootton	1.5 cars per h/h (77% car driver to work)

Two features of this pattern are significant for the transport strategy. First the relatively low rates of car ownership mean that if, as desired, income levels rise then rates of car ownership will increase, thus fuelling car use and the decline in use of other modes. This will work against the target of zero traffic growth in the town, and attempts should be made to avoid this happening by ensuring that alternative modes are of high quality.

Secondly, the spatial distribution of the car ownership and car commuting rates support very strongly the policy of focusing growth in the town, and especially in the town centre. The greater the proportion of new housing that is located in the accessible central parts of the town, the lower is likely to be the car traffic generation rate. For example, location of new housing at the periphery of King's Lynn would generate 50% more car commuting trips than new housing located in the town centre. Moreover, the impact of inward as

opposed to outward commuting would have a disproportionate impact on congestion.

4. Services and facilities

College

There is a need to resist the relocation of services and facilities to locations that are less accessible by non-car modes. A major concern is the suggested relocation of the college, which could have a negative impact in terms of transport sustainability. A full transport assessment should be undertaken showing any changes associated with any relocation in terms of levels of car use, and also the degree of accessibility by students and employees without a car.

Hospital

The hospital is the largest single employer in the Borough. As such it is another key attractor in the town, requiring daily access by staff, many of them on shifts, as well as access on an irregular basis for patients and their visitors. The hospital is served by the most frequent bus services currently available in the town, although this is only along the Gayton Road corridor to the town centre. Access to the hospital from all other areas in the town requires a change of bus at Gaywood centre of at the bus station. There would be benefit to introducing service extensions or modifications to provide more direct access to the hospital. We are not aware of any plans to relocate the hospital.

Lynnsport

Lynnsport is well located for the local population catchment, but is not so convenient for residents of other parts of the town, lying away from both the main bus routes and the main road system. It is fairly well served by cycle routes, however.

Annex B

“Traffic valve” traffic control scheme proposed for King’s Lynn

The problems

1. Uncontrolled and unpredictable delays determined by arrival rates at junctions
2. Variable journey times through the network hence disrupting bus schedules
3. Queuing occurring at locations where emissions and noise cause problems, and where cyclists and pedestrians are affected
4. Air quality problems at the heart of the network in Railway Road and London Road.

The requirement

The local transport strategy for King’s Lynn includes a target of zero traffic growth. Some means of discouraging further increases in car use therefore have to be found. Traffic control could form a part of the means of achieving this.

Zero traffic growth means that a greater proportion of trips will need to be made by non-car means. This requires improvements to bus services, and to walking and cycling conditions. It is being proposed to introduce bus priority measures sufficient to enable bus services to be run reliably at all times. It is also proposed to reduce the severance caused by heavily trafficked streets in the town, and hence to improve walking and cycling conditions. The return of Railway Road to two-way traffic operation is regarded as a positive step in this respect, provided that the scheme is designed with this in mind.

Road space needs to be reallocated from carriageway to footway and/or cycleway space, and at signals greater priority needs to be given to pedestrians and cyclists crossing the street (i.e. with longer or more frequent phases).

The concept

The concept includes the following factors:

- Delays occur at certain points in the network, and are not evenly distributed either in space or time. With traffic signals, flow and queuing can be regulated so that the pattern is more predictable
- Queues can be relocated to where they cause less interference to buses, pedestrians and cyclists;
- The most sensitive locations are often those that also create traffic bottlenecks. By creating bottlenecks at less sensitive locations, traditional bottlenecks can be relieved. This is usually referred to as “queue relocation”.

- A proportion of drivers may respond by choosing not to make the trip, or to use an alternative mode, or to re-time their trip to avoid delays, or to select a different or closer destination to avoid known delays. The working of the scheme would itself improve the alternative choices available to such drivers.

The proposal in outline

The proposal is to provide traffic signals at all the significant junctions in King's Lynn and to link them so that traffic flow throughout the road network is controlled. Flows and delays can be located to achieve the optimum result.

Are there any precedents for the proposed scheme?

I am not aware of this technique being used in the way proposed. The concept of controlling flow as a means of reducing the impact of congestion is not entirely new, however. There are two closely related concepts that are in use, namely "queue relocation" and "ramp metering".

Some information on these is given at Annex C

Annex C

Queue relocation

The LTP strategy includes as part of the Area-Wide Traffic Management Scheme (AWTMS) a proposal for regulating traffic flow through light controlled "traffic valves". This is related to the queue relocation concept. This annex provides some detail about experience of queue relocation measures elsewhere.

Queue relocation has been used to assist in the provision of bus lanes in London. Transport for London has commissioned a Queue Relocation Research Study from JMP consultants with a view to preparing a Guidance Note for use by London Boroughs that are implementing pre-signals, virtual bus lanes and other gating arrangements.

There is a queue relocation scheme on the A5 at Dunstable, costing £2 million.

A TRL research study into the impact of queue relocation on emissions concluded:

> *On-street trials tested the benefit of queue relocation. Queues were relocated through gating, controlled by traffic signals. This aimed to reduce emissions in sensitive areas at the expense of increases in areas where less people would be exposed to the pollutants and natural ventilation would reduce the impacts.*
> *Results showed that during the 2 hour peak period emissions were reduced in the protected areas by 3% to 10% according to pollutant. Further analysis showed that during the peak quarter hour within the morning peak the reductions were almost twice as great as the reductions in average values. The queue relocation trials showed that if suitable sites were available to store the relocated queues emissions could be successfully relocated.*
> *Source*
> www.aetransport.org/etc/2001/brochure/abstracts/Urban_Policy.doc

A queue relocation scheme is being considered as an alternative to the Ely southern bypass

Ramp metering

The concept is to control the rate of entry of vehicles to a road or to part of a road network. The use of ramp metering to increase efficiency is not new in a motorway context, however, and there are more than 3000 schemes in the USA. There is an experiment with so-called "ramp metering" in Hampshire, led by the Highways Agency.
http://www.highways.gov.uk/aboutus/corpdocs/10_year_plan/rampmet/

The King's Lynn traffic management proposal may be seen against the background of such schemes, but its efficacy has yet to be demonstrated and it must be regarded as experimental. As such it may qualify for DfT demonstration project special grants or possibly the Transport Innovation Fund (see below), though this may only cover the cost of research and monitoring rather than the capital cost of the scheme itself.

The delivery of whole-route bus priorities arev acknowledged to be of greatest value to bus passengers, though of course priority measures are not usually required along the entire length of a bus route. A DfT note on bus priority has this to say:

> *Greatest bus passenger benefits are obtained from whole route priorities, which may comprise a combination of bus lanes, queue relocation and junction priorities (SCOOT, MOVA, Selective Vehicle Detection, etc.). Congestion along bus routes is often irregular, and buses generally obtain most benefits from measures in the most congested areas. Often such measures cause the greatest delays to other traffic, though these can be diminished with careful planning.*
> *Source: LTN 1/97 Keeping Buses Moving, SO, 1991 ISBN 011 551075 3, £12.50*
> www.dft.gov.uk/stellent/groups/dft_roads/documents/source/dft_roads_source_504705.doc

A summary of the concept of queue relocation is given by the Greater Manchester PTE:

> *Sometimes the highway layout means that traffic "funnels" into a congested area, for example at the end of a dual carriageway or on the approach to a district centre. This creates a traffic "bottleneck" and particularly unpleasant conditions for pedestrians and shoppers. On some QBCs the principle of "queue relocation" or "traffic metering" may be used.*
>
> *Here, a set of traffic signals can hold back excess traffic at a more suitable location where it can be "stored" and its release into the congested area downstream can be metered at a level which can be accommodated under free flow traffic conditions*
> *Source: http://www.gmpte.com/content.cfm?subcategory_id=1278538*

Annex D

Efficacy of non-car-driver modes of travel

	Advantages	Disadvantages
Public transport	• Serves everyone (at a price) • Can include rural and regional trips • All-weather	• Not in public control • Requires priority over other traffic to get reliability • May require subsidies for times and places of low demand
Cycling	• Serves everyone (fit enough) • Available anytime • Personal health benefits • Relative personal security	• Requires priority use of road/street space or segregated paths to overcome danger from traffic • Requires new infrastructure • Not attractive in bad weather
Walking	• Serves everyone (fit enough) • Available anytime • Personal health benefits	• Attractive only for short trips • Not attractive in bad weather
Park and Ride	• Serves regional/rural trips to town centre • Reduces call on town centre space for parking • Reduces traffic on radial roads within town • All-weather • Can help overcome resistance to public transport use amongst car owners	• Requires priority route into town • Requires investment in land and facilities • Does not serve town travel • Requires clamp-down on town centre parking (supply/price) • Can reduce demand for regional/rural public transport services • If used for commuters, there may be insufficient space for shoppers, and low off-peak demand for the bus service
Car passenger	• Personal convenience • High vehicle occupancy can reduce car driver trips	• Dependence on driver • Car passenger or escort trips may convert to car driver trips • Escort journeys can generate two car trips for one passenger trip

Annex E

Bus service restructuring

Priority on the roads

Improvement of bus services in King's Lynn is entirely dependent on the provision of routes that are free from unpredictable and excessive delays caused by other traffic. This means that bus priority measures must be devised and implemented on a “whole route” basis. This does not mean exclusive priority throughout each route, but protection from delay at locations where this is a problem. A mixture of different measures is likely to be required depending on the local circumstances. The measures are likely to include a mix of:

- Bus lanes
- Priority at traffic signals (“hurry calls”)
- Queue relocation
- Bus boarders that prevent overtaking (safety as well as priority measure)

Provided that such priority can be provided, other measures can be negotiated with operators through a Bus Quality Partnership (or Contract). Without such priority few if any of the listed improvements are likely to be achievable. The provision of bus priority is linked to the achievement of traffic reduction at congested parts of the road network, and to the measures for mode shift and traffic reduction outlined in the report.

Routes

- Re-routing buses to serve new and existing areas, exploiting opportunities for segregation from general traffic. Potential for new and extended services;
- Extend bus routes to serve Tuesday Market Place and/or other parts of the town centre;
- Fixed or semi-fixed routes linking employment and housing areas in King's Lynn;
- Legible routes and stops requiring simplified town routes and route diagram (on “Overground” principle);
- Extend routes beyond town centre to provide direct links between north and south of town.

Frequency and reliability

- Focus efforts on measures to improve reliability rather than increasing frequencies (this is a variation from current policy);
- Minimum of 15 minute frequency on all town routes;
- Memorable timetable requiring clock-face timetable;

- All-day every-day service, with evening and Sunday services to support activities in the town centre, and leisure and hospital facilities, with use of revenue subsidy if necessary.

Interchange and integration

- Coordination of interchange at the bus station using clockface schedules;
- Interchange between services using timed “meetings” at the bus station;
- Interchange between town, rural and regional services;
- Creation of priority interchange between buses and rail services at King's Lynn station;
- Integrated ticketing and fare structures;
- Integrated information covering all operators and all services.

Information and promotion

- Town and rural services branding;
- Clear and consistent information both on and off routes;
- Realtime information at meeting point and all statutory stops, and at key locations in the town centre.

Vehicles and facilities

- Bus shelter and other facilities at all fixed stops, including full timetable information;
- Modern, high quality accessible vehicles;
- Bus station improvements to be identified, dependent on future role.

Bus Park and Ride

Park and Ride has the potential to reduce traffic-related problems in the town centre, including traffic congestion, pollution, and the amount of space given over to car parking. This will help to create a more attractive town centre for people to live in and to visit.

Park and Ride systems have to be well sited, well promoted, quick, efficient and frequent.

The initial scheme for investigation will be located at a previously identified site adjacent to the A47. A second possible scheme would be on the eastern approach to the town intercepting traffic that otherwise would use the Gayton Road corridor into the centre.

The feasibility of Park and Ride in King's Lynn is considered to be dependent on two key requirements:

1. Limitation of town centre parking demand through a balance of reduced supply and higher charges;
2. The provision of a direct priority route from the Park and Ride location to the town centre.

Without these conditions it is extremely unlikely that Park and Ride in King's Lynn would be operationally or financially viable.

A key issue to be investigated is the balance of demand for Park and Ride between peak time (journey to work) and inter-peak users.

Non-standard bus services

A characteristic of King's Lynn is the dispersed and low density employment areas away from the town centre. These are not easily accessible by bus from the main residential areas of the town. The possibility of demand responsive services or hail-and-ride services running on semi-fixed routes should be investigated as part of the bus-restructuring programme. These could be timed to provide interchange with the standard town services. They would be likely to operate mainly during working hours. However, the vehicles could be redeployed to provide other demand-responsive services at other times, for example to leisure and retail facilities in the evenings and at weekends.