Leicestershire County Council

An Explanatory Note for Members on the Leicester & Leicestershire Integrated Transport Model (LLITM) for a Scrutiny Presentation on 5th September 2012

Introduction and Background

1. Approval was given by Cabinet on 1st October 2008 for the County Council to develop an integrated county-wide landuse-transport model to replace the Central Leicestershire Transport Model which covered mainly the administrative area of Leicester City and parts of the County but not large enough to include any of the County towns. There were several compelling reasons why the LLITM was developed. First of which is to meet the requirements placed on local authorities by Central Government to provide sound transport evidence to support their bids for funding, LTPs, transport and land-use strategies, policies and plans together with the need to have a sound and comprehensive analytical tool with which to analyse and understand the wide ranging implications of growth and its impact on transport, the economy and environment. Allied to these are the gap in our knowledge of understanding the connections between people's home location and where they work and how their movements impact the network.

2. Prior to the LLITM the Authority did not have a model that covered the whole of the County's geographical area but had purpose built scheme-specific local models for Loughborough, Ashby, Earl Shilton and Melton all of which were developed in-house by County Council staff to secure funding for the bypasses named after them, developer contributions and transport studies.

3. The lack of a unified model with a county-wide coverage meant that the Authority could not fully account for the wider network impacts of development and infrastructure provision because of the lack of understanding of the interactions between urban centres, settlements and Leicester City. The LLITM now provides that wider breadth of evidence to support planning and transport decisions.

4. The now defunct Regional Plan expected Leicestershire and Leicester City to accommodate over 97,000 extra houses over the period up until 2026, together with all the associated employment and services. The District Councils as part of their core strategies are still planning for a substantial level of growth. This growth will stifle the economy of the county if it is not properly analysed, understood and catered for.

5. The LLITM would make us one of the best-placed councils in the area when it comes to supporting Development Plans, responding to growth and securing funds for major projects. This is part of our forward planning for LTP3 and beyond and is invest-to-save and invest-to-succeed. Securing £21.32m on the strength of evidence from the LLITM from the DfT over three schemes in less than two years of its use is a case in point. It is also part of our partnership with the City Council and Districts.

Model Purpose and Scope

6. The LLITM is very much a necessary tool of the planning process intended to provide transport and land-use forecasts to support the authority in making planning and transport decisions as part of its statutory duties as Highway Authority and Statutory Consultee. It provides a wide ranging vein of evidence on the performance of both the private and public networks in terms of under/over

provision, congestion problems, and provides possibilities for testing different options to identify a preferred value for money solution to a problem. Its scope of use ranges from support evidence for whole county level strategy to the appraisal of individual schemes.

7. The objectives for its development include consideration of relatively detailed local interventions for individual market towns as well as the county as a whole. In order to be able to test policies involving price-related mechanisms such as road pricing and parking restraint the model needed to have detailed segmentation of travellers by purpose, income, car availability, car ownership, mode, time of travel, destination, etc.

LLITM and what it does

8. The LLITM like all models is a forecasting tool which provides an understanding of likely future impacts of developments, transport policy, plans and untested new strategies. It does this through an integrated system of models each of which performs a different function. The diagram below shows the component functions of LLITM.
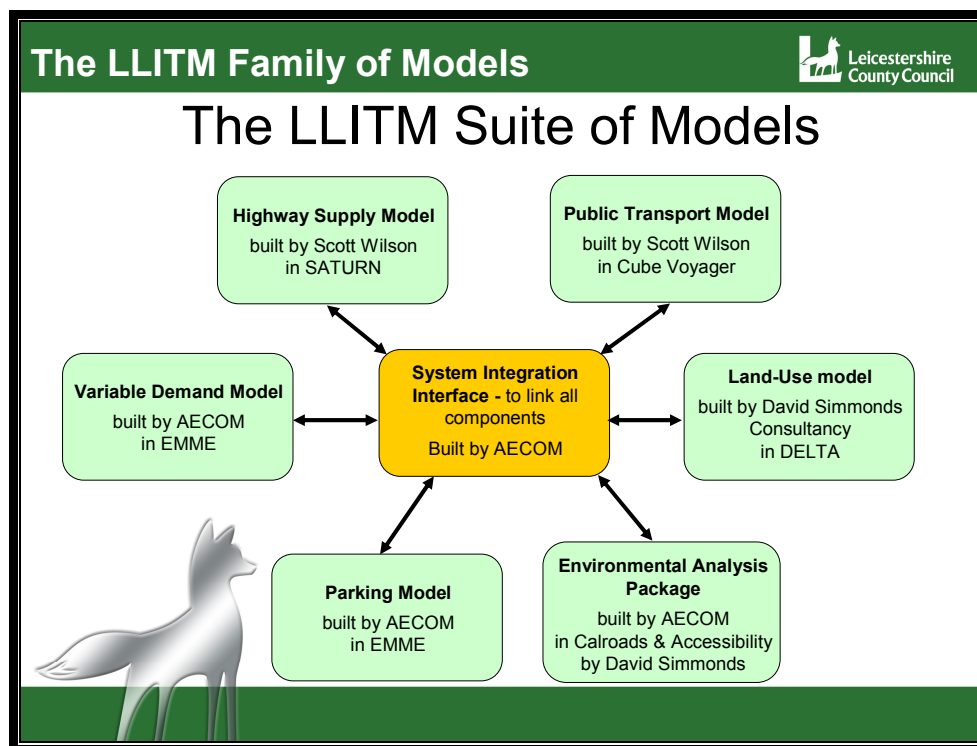
- The Highway model provides information on the performance of the highway network now and in the future;

- The Public Transport model provides information on passenger movements on the network and its likely use in future;

- The Demand Model takes information from these two models to predict travel demand responses, in the form of changes in mode of travel, destination of travel, time of day and frequency of travel, as a result of transport intervention

and policy. For example, evidence of change in travel behaviour as a consequence of, say, the introduction of road charging or parking restraint in a town centre.

- The land-use model which also takes information from the transport models forecasts changes in population, car ownership, employment, household location and migration.

- EASE the environmental analysis suite uses data from both the transport and land-use models to calculate impacts on CO_2, air quality, noise and accessibility to land-uses such as schools, jobs, etc.

LLITM deals with questions such as:

- what would happen if we built a bypass, park & ride site, 10,000 homes there, increased parking charge, introduced road pricing, asked bus companies to reduce bus fares, and increase frequency?

- what happens if we plan for development in that location/area?

- what are the likely outcomes? – congestion, CO_2, air quality, noise, house prices, migration, etc

- what happens if the economy grows faster/slower?

- what happens if we have higher growth in some sectors of economy, lower in others?

9. Forecasting draws together assumptions about future economic growth, the cost of fuel and fares, together with the planned allocation of land for development and proposed transport schemes, to forecast how the patterns of land use and transport demands will evolve over time. In turn, the influences of changing travel conditions (e.g. highway congestion) are represented in the forecasts.

What the LLITM provides

- Gives us an understanding of existing state of the transport system and tells us what might happen to the network if nothing was done as a result of population growth, car ownership, changes in household location, economic growth, employment location changes, etc;

- Helps us determine planning applications and reduce the impact of growth on the network by giving us tools to promote sustainable development and transport and influence reduction in carbon emissions;

- Gives us analysis to help us steer growth into the right areas;

- Helps with policy formulation and optioneering analysis to choose options that are appropriate for local areas;

- Helps us understand where there is under provision of public transport services and what we can do to deal with the problem;

- Provides tools to help us challenge the carbon implications of transport and economic growth, deal with air quality and noise;

- A planning tool for dealing with changing Government policy – Transport Act 2008 and LTP duty; Nationally Significant Infrastructure Planning Act 2008 (eg Strategic Rail Freight Interchange); Network Management Duty; National Planning Policy Framework; LEP.

- A tool for meeting Central Government requirements for transport infrastructure funding;

Lessons Learnt by Using LLITM

10. Initial application of the model started with the assessment of current land use and transport plans to develop an improved understanding of their implications. The initial forecasts are:

- for population and employment growth respectively of 24% and 12% across the county by 2031;

- for traffic forecast to increase by 26% over the same period, in part, reflecting DfT assumptions that car costs will reduce over time with increasing vehicle fuel efficiency, although the model forecasts also reflect proposed initiatives to promote more sustainable travel; and

- since public transport fares are assumed to increase in real terms there is a forecast mode shift to car, particularly from public transport, with public transport trips forecast to increase by 16%, which is lower than the forecast population increase.

11. The consequences of these forecast increases in demand are for highway speeds to decline, on average across the county and carbon emissions to increase as the forecast growth in traffic exceeds the assumed increase in car fuel efficiency.

12. The model is operated through a framework of consultants under contract to the County Council. These consultants were selected on the basis of their expertise in modelling. However, owing to the complexity of LLITM which is an integrated land-use and transport model and the 'rush' to use the model soon after its launch meant that some of the consultants who were not involved in developing the model needed time to understand and learn the workings of the model. This 'knowledge transfer' process caused delays in the initial set of LLITM applications despite training sessions paid for by the County Council. Consultants are now familiar with the workings and intricacies of the model and most are now working

remotely from their offices.

13. The LLITM is a spatially detailed model and the requirement to build a model suitable for policy and appraisal led to a detailed segmentation of travel demand (for example 7 journey purposes: commuting, shopping, education, business, etc; 3 income bands, 5 user classes, 24 hour time period, AM, inter-peak, PM, off peak, 5 responses – mode shift, destination, time of day travel, frequency, parking response) all of which increase the complexity and computing time required to run the demand model. The model is not unique in this. Models of similar complexity experience comparable run times of around 5 days for one forecast year. This has been a source of difficulty as clients did not initially fully understand how long models took to run in order to allow sufficient time for analysis and reporting.

14. Whilst the model meets the DfT criteria at the County-wide level it has not been possible to produce that degree of fit in every area of the model. With over 22,000 links and 35,000 junction turns it is not possible to have the traffic counts nor journey time data to validate every single road in the network. The cost of data collection will simply be prohibitive. This is common knowledge with models but users expecting that the LLITM will produce a perfect fit in their areas had difficulty in accepting that models cannot provide that level of certainty. Models are normally built for specific purposes and the LLITM was focussed on the County market towns, Leicester and the County both in its data collection and validation. It is therefore normal practice that a model is reviewed and improved for each use to ensure 'fitness for purpose'.

15. This also meant that the model was not well validated on HA roads due to lack of travel data from motorways and trunk roads. A matter which is being addressed by the maintenance programme that is about to start.

16. The DfT recognising this difficulty says:

The achievement of the validation acceptability guidelines does not guarantee that a model is 'fit for purpose' and likewise a failure to meet the specified validation standards does not mean that a model is not 'fit for purpose'. A model that meets the specified validation standards may not be fit for particular purposes and, conversely, a model that fails to meet to some degree the validation standards may be usable for certain applications. Local Model Validation Reports should therefore not include statements to the effect that, because the validation standards have been (largely) achieved, the model is necessarily fit for purpose. (TAG Unit 3.19 paragraph 3.4.2).

Use of LLITM to date

17. LLITM is now in use with district councils, developers and transport consultants using it to test and analyse Local Development Framework core strategies and associated area action plans, the impact of new housing and employment developments and other transport studies.

18. In the last 12 months LLITM has been used to test a number of different scenarios for Loughborough Inner Relief Road which informed Leicestershire County Council's successful major scheme business case for Department for Transport (DfT) funding. This work helped to secure the £14.76 million contribution needed to fund this long awaited scheme which has been on the books for over 30 years.

19. LLITM has also been used to provide evidence to support the inclusion of initiatives and schemes in bids to DfT under the Local Sustainable Transport Fund (LSTF) and Better Bus Access Fund (BBAF). Both bids needed to demonstrate value for money and how they would support economic growth, reduced carbon emissions and reduced congestion. LLITM was able to provide comprehensive evidence to demonstrate the required benefits and this helped to secure £4 million and £2.56 million from the LSTF and BBAF respectively.

20. In addition LLITM is also being used to provide evidence to underpin our LTP strategy and how we implement it. An example of this is the Principal Urban Area (PUA) Transport Study in association with Leicester City Council. Following the original Ptolemy study in 2009, the PUA Transport Study will allow us to re-assess the travel related impacts of dwelling growth in the Leicester Principal Urban Area and surrounding districts between 2008 and 2026. It provides an opportunity to re-visit Ptolemy findings in order to ensure policy and investment decisions are based on the best and latest forecasting information we have available.

What we are doing to keep it maintained and relevant

21. To ensure that LLITM continues to be the best tool available to analyse the transport impacts of growth and policy decisions it needs to be maintained and kept up-to-date to ensure that model outcomes are based on the best available data, current Government advice and information.

22. To this end a maintenance programme is being developed to carry out various upgrades to the existing 2008 version of the model leading to a new updated 2014 version which will include data from the 2011 Census, new traffic survey and household survey data.

23. The LLITM maintenance project is being initiated and a Project Board will be meeting on 31st August to approve the project mandate.

24. The knowledge and skills to use LLITM internally will be further developed to reduce the dependency on the Transport Modelling and Planning Framework Agreement.

25. LLITM will continue to be promoted as the tool of choice to assess the impacts of housing and employment developments, changes in population size and demographics and transport policy and schemes.

Concluding Remarks

26 Planning inspectors and Government are demanding more and better analysis of proposals and objections, as appropriate. Poorly founded proposals are increasingly likely to get rejected. Transport impacts of development are increasingly influential in shaping the forward vision for transport in Leicestershire and in the absence of a regional plan and regional transport strategy the Local Development Documents produced by the district councils must allocate land for growth and development.

27 It is critical that the County Council (and Leicester City Council), as Highway and Transport Authorities, in light of new planning legislation – Localism Act, National Planning Policy Framework and the requirements for major transport infrastructure through the LEP to be based on a sound business case - are able to offer evidence-based analysis to local planners, Inspectors and Central Government on where best to locate growth and how transport investment should be directed to support it. Inspectors have indicated in the past that they are not tolerant of speculative evidence that is not backed up by thorough analysis.

28 As an Authority we need analytical tools to help us examine and use the necessary evidence to make the right policy decisions and adopt strategies that can stand up to scrutiny and challenge. The LLITM is one such decision tool.

Officer to Contact:

Sonny Tolofari, Team Manager - Transport Data & Intelligence
Tel: 0116 305 7102
Email: sonny.tolofari@leics.gov.uk