NORTHAMPTONSHIRE STRATEGIC TRAFFIC MODEL
NON-TECHNICAL SUMMARY

The Northamptonshire Strategic Traffic Model is Northamptonshire County Council's tool for testing major transport and development proposals. It is a full four stage transport model covering:

- Trip generation
- Mode choice
- Trip distribution
- Assignment

The demand model (trip generation/mode choice/trip distribution) and the public transport model are created using EMME3 software. The highway model is created using a suite of software called SATURN (Simulation and Assignment of Traffic to Urban Road Networks) originally developed by the University of Leeds and since marketed and developed in association with Atkins.

The model is created in accordance with guidance issued by the Department for Transport. The model covers the whole of the county, with an increasingly less detailed coverage beyond the county borders.

The basis of the model is a combination of Roadside Interview Surveys (being replaced in the current model update by mobile phone data) and traffic and bus or rail passenger counts. As the survey information cannot represent all trips, data from the census and National Travel Survey is used to infill the missing trips, so that the model should represent all trips beyond very short journeys in Northamptonshire. This model is known as the 'base year' model.
These trips are represented in the model in a matrix of movements between zones. The zones vary from quite small areas near town centres to some very large areas well away from the county.

The public transport model represents the various bus and rail routes which exist in the county, together with information on their frequency etc.

The highway model has a simplified computer model of the county's road network, and of key routes to destinations further afield. The network does not include every single residential or minor rural road, but is sufficiently detailed for trip patterns to be modelled. Each link in the network has a length and a free-flow speed, together with an equation by which speed reduces as traffic flow increases. In addition, in the more detailed areas of model coverage there are simplified junction models of the roundabout, traffic signals or give-way as appropriate to allow the delay at those junctions to be modelled.

The trips from the matrix are 'assigned' to the network. On each 'run' the model looks for best route between two points. This routeing is determined from something known as generalised cost, which is a combination of time and distance. As the route choice varies as

flow increases, the model runs dozens of iterations until a degree of stability in the assignment is found. It then applies information from the last few model runs so that vehicles travelling between A and B can follow a number of different routes, representing the different choices people make.

An independent set of traffic counts (known as validation data) which has not been used in the production of the trip data is used to check that the base year assignment model is representing things correctly. There is a series of statistical tests set by the Department for Transport which the model is required to meet to demonstrate that it is a good model of what is happening.
Future year scenarios are created by making changes to either the network and/or the trips. Local planning authorities will ask us to test the level of development in their local plans, and identify what transport improvements are needed. We will look at what areas become congested with the additional traffic and propose appropriate solutions. We also test our own road schemes in the same way.

Developers also ask us to test their developments (at their cost) through the model to inform their planning application. This is done by our consultants, so that we have confidence the information is correct, and we check that the various inputs are correct. The model has a graphical interface package within it. This is used to extract data from the model which is normally included in a report on the modelling undertaken.

The model has to be updated every few years to ensure that it is up to date. This mostly means re-surveying the trips, but the network is also checked for changes. For future year models, things like changes in Local Plan allocations and addition of any more development granted planning permission are updated on a much more regular basis.