Air Pollution Effects on Habitats Sites
Guidance Note for Air Quality Assessments in Bracknell Forest[1]

1. For developments with a net increase of over 100 dwellings and other developments on a case by case basis where they have the potential to impact air quality, an Air Quality Assessment should be provided to the Council to enable it to carry out a Habitats Regulations Assessment (HRA) to establish the likely significant air quality effects on the integrity of habitats sites arising from the development in combination with other plans and projects.
2. The assessment should fulfil the requirements of Natural England's (NE) guidance '*Natural England's approach to advising competent authorities on the assessment of road traffic emissions under the Habitats Regulations (NEA001)*' issued in 2018 which can be found at http://publications.naturalengland.org.uk/publication/4720542048845824 The application of the NE guidance to developments within Bracknell Forest has been discussed and agreed with NE and is set out in this guidance note.
3. The Air Quality Assessment should consider the air quality effects in combination with other plans and programmes, including development plans which are adopted or have been submitted to the Secretary of State.
4. In order to establish the in-combination traffic flows, the Council's strategic transport model should be used. Please see appendices 1 and 2. Several versions of the strategic transport model have been developed and are available from the Bracknell Forest Transport Team - these are listed below. Models (d) and (e) will need to be used for the Air Quality Assessment as the Bracknell Forest Local Plan (BFLP) has now been adopted.
    a. 2019 base year
    b. 2026 model (includes former Core Strategy and projected build out to 2026 of Site Allocation Local Plan sites)
    c. 2037 model (includes 2026 former Core Strategy and projected build out to 2037 of Site Allocation Local Plan sites, plus committed network improvements and background growth to 2037)
    d. 2037 model (including the new BFLP sites)
    e. 2037 model (including the new BFLP sites and mitigation schemes)
5. The Air Quality Assessment should commence with a screening and scoping stage to establish:
    a. Any areas where potential air quality effects at habitats sites (both within the local authority's administrative area and within the wider area) 'in-combination' with other plans and projects can be screened out as insignificant; and
    b. Roads and/or habitats sites (both within the local authority's administrative area and within the wider area) that require further assessment to determine the likely effects of the development on habitats sites 'in-combination' with other plans and projects.
6. The screening and scoping stage may initially be limited to consideration of the in combination Annual Average Daily Traffic (AADT). If the results cannot be screened out as insignificant, or are marginal, further air quality assessment should be undertaken to consider changes of both the relevant air quality critical loads and critical levels; this is likely to require air quality modelling.
7. When applying the assessment to the Thames Basin Heaths Special Protection Area (SPA), NE has advised that the assessment should focus on the dwarf shrub heath (a critical load of 10-20 kg N/ha/yr) for which the site is classified.
8. When applying the assessment to all other habitat sites (including the Windsor Forest and Great Park Special Area of Conservation (SAC)), NE has advised that all the relevant APIS critical loads for N deposition should be applied.

[1] Version 1.6 2025 - 26

Bracknell Forest Council

Bracknell Multi-Modal Transport Models

Protocol for External Use

Introduction

This protocol is for the use of developers who wish to use Bracknell Forest Council's (BFC) multi-modal transport models or any other models prepared by or on behalf of BFC to support development proposals within the Bracknell Forest Borough.

The models have been developed using VISUM software (Version 18.02-09) and include a demand modelling element that identifies alternative patterns of trip generation and mode choice based on different trip categories, population profiles, census information and the availability of cars or public transport.

They have been validated to Department for Transport standards set out in WebTag, thus giving a reliable representation of existing transport networks within the borough of Bracknell Forest. Care has been taken to ensure that the principal routes into and within the town centre are represented accurately.

There are three fully validated models representing the AM peak hour (0800-0900), an average inter-peak hour (1000-1600) and the PM peak hour (1700-1800) for a base year of 2019. AM peak, inter-peak and PM peak hour models have also been developed to represent two forecast scenarios for the years 2026 and 2037. Information that these models can typically provide is outlined in the accompanying guide on model use, BFMMTM Information April 2024_copyright, however outputs beyond those listed may also be considered following discussions over requirements.

Supporting documentation will be available on request. This includes the *Base Model Development and Validation Report* and the *Survey Report*.

Applications

The model may simply be used to output existing information, such as link or turning flows or zonal information, or in more complex applications, it can be used to assess new development scenarios. The impact of a new development will be assessed by adapting and running models to include the type and scale of the proposed development, and any network changes. The charging protocol below sets out two categories for the model's use – one for obtaining information from the existing models, and one for use under licence.

Modelling work may occasionally be undertaken in-house by BFC staff, based on a scope of work agreed with those requesting information. If BFC does not have the capacity to carry out the work in-house (on larger or more complex requests), the developer may appoint their own VISUM-capable consultant, licensed by BFC to use the models to produce the necessary work. In this instance, BFC will maintain an involvement in the modelling work to help guide the outcome and speed consideration of the modelling outputs. Prior to the expiry of a model access licence, any model outputs produced must be approved by Richard Wilson or Stuart Jefferies at BFC before such information is made public.

It is an essential requirement for any licence holder to provide details of all modelling outputs to Richard Wilson or Stuart Jefferies at BFC before any information is made public. This will enable them to agree outputs with the Council, or if required to discuss further work to refine these outputs.

The existing 2019, 2026 and 2037 AM peak, interpeak and PM peak multi-modal models, and all future models prepared by or on behalf of BFC or under licence are the property of BFC.

All contact for agreement on access to the model shall be made through Stuart Jefferies (Transport Strategy Manager) in conjunction with James Turner (Development & Adoptions (Transport) Manager). All requests

will then be discussed with Richard Wilson (Transport Modelling) and a work programme will be set out based on the details of the request and ongoing use of the model, or licensing arrangements discussed.

Requests to use the model to assess new development scenario impacts should be provided with the following basic items of information:

- Type of land use(s), e.g. B1 Business, A1 Food Retail, C3 Dwelling House etc.
- GFA of proposed development in m^2, number and mix of housing units or details of other development, such as retail floor space and number of hotel bedrooms.
- Details of any trip rates and distributions assumed.
- Location plan for proposed development.
- Details of development programme (e.g. phasing, replacement of existing land uses). Forecasts can be provided for 2026 or 2037. Alternative years can be assessed by the user under a licence agreement.
- Details of proposed infrastructure improvements associated with the development. This should include any new roads, footpaths or public transport services, as well as changes to existing provision.

Requests should be made well ahead of any deadlines related to the work. Whilst running the model may only take a relatively short time, there is no guarantee that a request can be accommodated immediately due to existing demands.

Charging Protocol

The scale of charging to be applied to use the model will depend on the task requested. The charges applied cover the following:

- Existing Information Charges
- New Development Scenario Charges

Existing Information Charges

Fixed charges will apply to the provision of data from the model where it is used as a database for interrogation. Such information can be obtained from the existing models without the need for adaptation of the model. Details of these charges can be provided by BFC upon request.

New Development Scenario Charges

Any use of the models to test new developments will require an access licence. The Bracknell Multi-Modal Transport Models may be used to assess the impact of development proposals as part of the preparation of a transport assessment. It is possible that due to the elements of the transport assessments to be addressed, forecast year matrices will not exist, for example if an assessment is required for an alternative year. In such circumstances, bespoke model runs would be required to generate matrices to assess some significant developments.

In the first instance, the scope of the modelling outputs needed to support the transport assessment will be agreed as part of the planning pre-application discussions. The extent and description of the modelling work will then be agreed with BFC, and a decision made on whether the work can be carried out in-house by the Council, or whether the developer will need to appoint a VISUM-capable consultant for the work. If an outside consultant is needed, a licence for access will be required. Work carried out in-house where time and staff availability permits, will be charged on an hourly basis that includes a pro-rata licence fee to an agreed scope of works. BFC is prepared to enable use of its models, under the terms of a licence to be issued to appropriate consultants. The scale of charges for new development scenario work cover:

- Modelling work carried out in-house.
- Modelling work carried out by consultant under licence.

Modelling work carried out in-house.

If BFC staff are available to carry out modelling requests in-house, an hourly rate will be charged to the developer (ex VAT), and this will incorporate a pro-rata licence cost for access to the models, as a contribution to the cost of model development and maintenance. Developers are encouraged to utilise this option where possible.

Modelling work carried out by consultant under licence.

For larger projects, a fixed term licence cost will be charged to the developer for external use of the Council's models under licence by BFC as a contribution to the cost of model development and maintenance. In addition to this, the developer would meet the consultant's fees.

Licence costs (excluding VAT) for model access:

- £21,882.50 for six months
- £4,435.83 for one month

A pro-rata rate will be applied for requests covering alternative lengths of time. These figures are applicable for licences issued between 1st April 2025 and 31st March 2026.

April 2025

Bracknell Forest Council

Bracknell Forest Multi-Modal Transport Model

Information For Developers

29 April 2024

1. Introduction

1.1. What is the Model?

1.1.1 The Bracknell Multi-Modal Model is a transport model of the administrative areas of Bracknell Forest and a significant proportion of surrounding authorities' areas. It provides details of existing and future travel demand by car, bus, rail, cycle and on foot between locations within and beyond the borough. The transport impact of this demand can be identified and scenarios tested that represent changes in policy, population, employment or local infrastructure. The model was developed in 2019 and can be updated every five or six years to ensure its output remains robust in the future.

1.1.2 The model was built using PTV VISUM 18 software and displays the major transport networks in the borough and the existing (2019) patterns of travel demand. It can also identify where pressures exist in these networks and how travel patterns may be affected by changes such as those listed above. It represents the busiest periods of a typical weekday which are an AM peak hour (0800-0900) and a PM peak hour (1700-1800), as well as an average inter-peak hour from the period 1000-1600. It covers a base year of 2019 and two forecast years (2026 and 2037) to represent the two most recently adopted Local Plans. Interim future year models can also be developed.

1.1.3 It has been developed to help the Council:
Formulate and manage the Local Development Framework (LDF)

- Assess the transport impacts of planning approvals, mitigation requirements and S106 contributions
- Assist transport policy development, e.g. parking charges and public transport fares
- Develop future Local Transport Plans and other bids for central government funding
- Provide information associated with cross-boundary and regional policy discussions
- Identify current and future congestion problems to help meet the requirements of the Traffic Management Act 2004
- This document provides a simple guide to the model's capabilities and limitations.

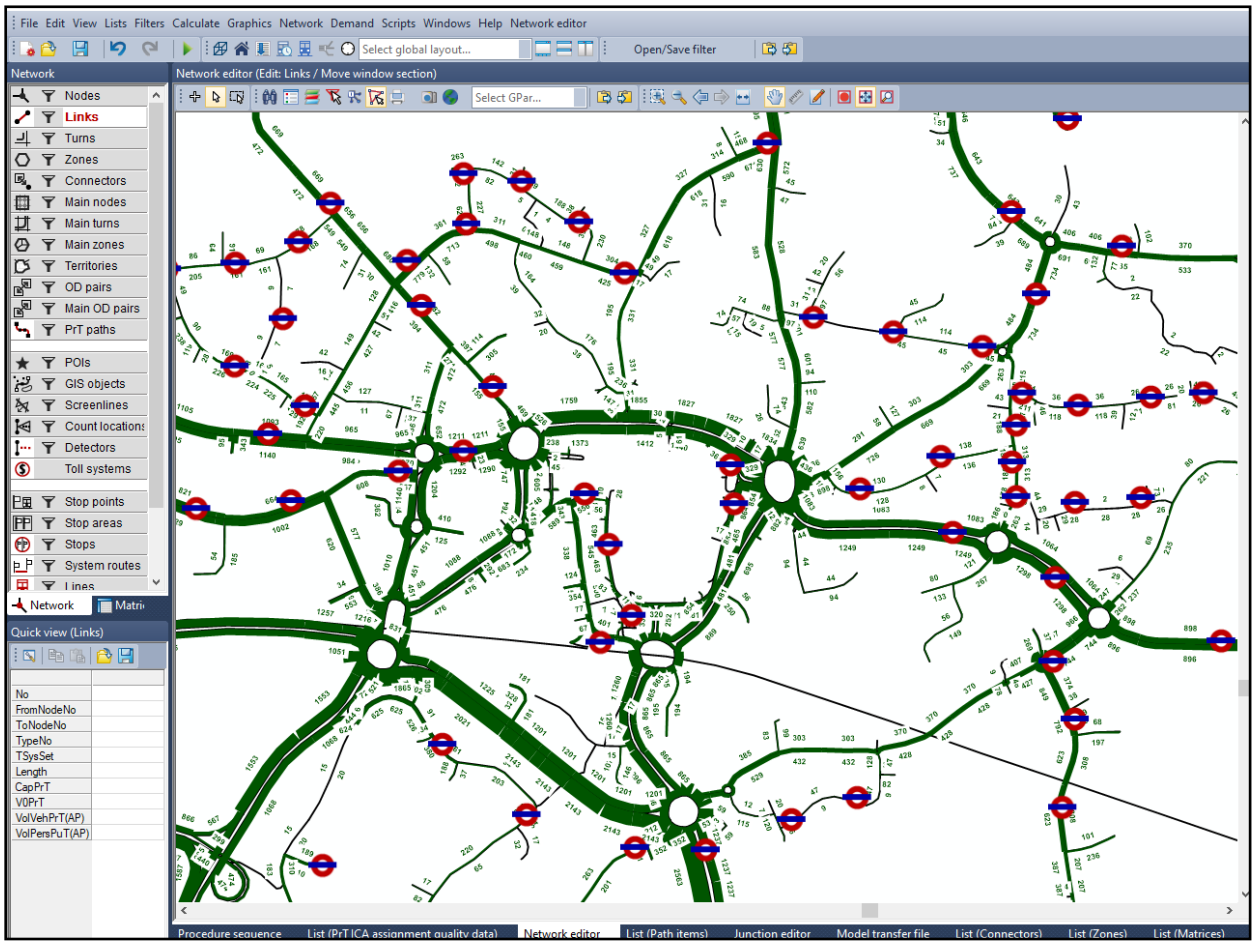
2. What comes out of the model and how easy is it to understand?

2.1 Model output

2.1.1 The Bracknell model uses GIS (Geographic Information System) technology to present information in a user-friendly way. Output can be provided on recognisable map bases such as Ordnance Survey mapping or aerial photographs (where available) to enable easy understanding in a local context.

2.1.2 The volume of traffic using a section of road on the network can be displayed. The example in Figure 2.1 can be easily recognised as Bracknell Town Centre. Hourly directional traffic flows are shown numerically and with lines of varying thickness (called bandwidths) to reflect the differing traffic levels around the network. This gives an instant visual impact and quickly identifies routes with a higher demand. Attributes including speeds, delays, queues, capacities, HGVs and pedestrian numbers can also be shown. The presentation detail can also include the locations of all bus stops (as shown in Figure 2.1) and identify demand along bus routes.

Figure 2.1. Traffic Levels and Bus Stop Locations



2.1.3 The model can also provide information such as journey times and identify where traffic is likely to rat-run.

2.1.4 It can test the impact over a wide area of engineering schemes such as bus only lanes, reduced speed limits, junction revisions (e.g. installing traffic signals) or one-way streets. On public transport networks, it can assess the impact of service changes including fare and frequency revisions, route diversions and changes in demand for private transport.

2.1.5 It also provides an input to a separate micro-simulation program (VISSIM) that can examine the operation of individual road junctions in greater detail.

2.2 Who can use the model?

2.2.1 Output can be presented in clear and simple formats, however expert analysis is still needed due to the software's complexity. This can be provided from within the Council. Requests for information from the transport model should be forwarded to Richard Wilson (richard.wilson@bracknell-forest.gov.uk) using the Council's protocol for the model's use. A fee estimate for providing outputs or modifications to the model will be provided once a scope of works has been provided to the Council.

3 How can the model be used to assess the impacts of developments?

3.1 Simple transport assessment output

3.1.1 The model can provide the existing and predicted traffic information included in Transport Assessments (TA) that are required to support planning applications.

3.1.2 It identifies the routes that journeys associated with a development will take and assesses the impact in terms of delays at junctions. It can also be used to test the impact of mitigation measures such as bus service improvements or junction upgrades. The Council will examine the model outputs to assess whether the proposed S106 investment from the developer off-sets the transport impacts created.

3.2 Additional information

3.2.1 The use of the model to assess an application provides additional and better information to that included in most TAs. Added benefits include:

- It intelligently identifies the routes vehicles will take rather than relying on census statistics;
- Mode choice (i.e. car / bus/ walk etc) is also derived intelligently, rather than estimating public transport patronage manually;
- The routes vehicles take away from a development site can be analysed;
- The model estimates the consequential impact of a development, i.e. the changes in routes that other drivers take to avoid delays local to the site.

3.3 Dealing with small applications

3.3.1 Care should be taken in assessing small planning applications. Transport models allow vehicles to subtly re-route around delays, resulting in the effects of any new development being dispersed quickly. It is recommended that the model is not used for applications generating fewer than 50 trips.

3.4 Time to test a scenario in the model

3.4.1 The time required to develop and test a scenario within the model will depend on its scale. A simple highway scheme involving the remodelling of a junction e.g. from priority to signals or the addition of a new section of infrastructure may be assessed within a few hours. Using the model to assess changes in land use requires longer as both trip generations and modal split will be modified.

3.4.2 In modelling a future land use change for commercial development, estimates of the workplace population and retail floor space will be derived and input to the model. This is straightforward but will depend on the number of locations to input.

3.4.3 Population changes can be modelled, for example to incorporate new residential developments of 50 or more units.

3.4.4 A combined scenario incorporating highway or public transport network changes and development site input would take longer to assess, and this would depend on the scale of inputs required.

4 What can it tell the user about delays at junctions?

4.1 How it works

4.1.1 The model can assess the performance of individual junctions in a similar way to other software packages commonly used in Transport Assessments. The volume and routing of traffic will impact on the network capacity at and between junctions. The model can calculate the impact at every junction or provide flow outputs that can be used in more bespoke junction modelling.

4.2 What can the model produce?

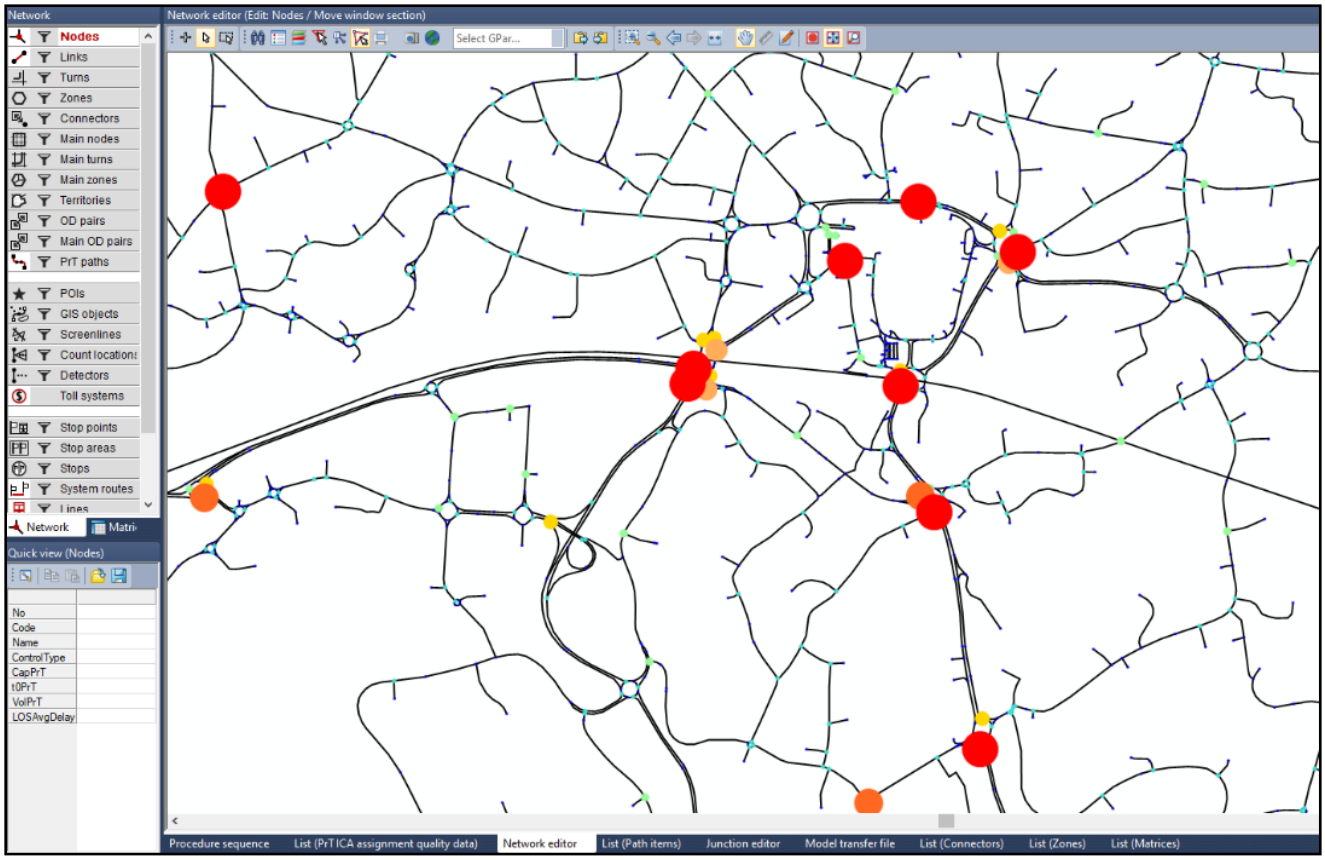
4.2.1 The output from the model is similar to that from other packages, e.g.:

- Traffic flows
- Journey routes
- Delay
- Journey times

4.2.2 The model is an excellent indicator of performance and can be used to identify the most congested junctions across the borough. This will be particularly useful when developing the capital programme and LTP investment strategies.

4.2.3 Figure 4.1 below shows road junctions around Bracknell town centre where the level of delay is represented by a scale of circle diameters of different colours. Delays or queues on individual approaches to junctions can also be identified.

Figure 4.1. Display showing Junction Delay



5 What can the model tell the user about public transport?

5.1 How does the model represent public transport?

5.1.1 The model holds a huge amount of data on public transport routes. Information includes:

- The location of all bus stops for each bus route
- The journey time for the bus along the route
- The capacity of the bus
- The operator of the service
- Key rail stations in BFB and the surrounding area
- Rail service frequencies

5.1.2 The model identifies the public transport services that passengers will use based on a mix of waiting time, travel time and fare and replicates their behaviour based on this mix.

5.2 What information can the model provide?

5.2.1 As well as the information identified above it enables the public transport system to be analysed in depth. Information that may be of interest includes:

- How many people are using particular buses or rail services?
- Which bus stops are used most heavily?
- The number of passengers using a particular corridor
- Where traffic delays affect bus journeys

6 Can it see into the Future?

6.1 Looking ahead

6.1.1 The transport model has been developed primarily to look ahead. Initially it was developed to represent a reference case scenario for the year 2026 which included the level of build-out of the 2026 Local Plan that had been completed. In addition, a final forecast scenario was developed for the same year that included the anticipated full build-out. This forecasting process is driven by several elements:

- Changes in land use and new developments: Over time the borough will have more housing, employment, and leisure facilities. The model holds information on the number of journeys made to and from different types of development. It uses estimates of land use changes from sources such as the LDF to forecast traffic on the road network.
- Car ownership and population composition changes: Different parts of the community, especially those without access to a car, make different types of journeys and travel choices. Using national statistics the model estimates how these elements will change and the impact they have on transport. For example, increased car ownership may result in more people choosing car travel over public transport.
- Changes in transport infrastructure: The Council, National Highways and others will invest in enhancements to the transport system and bus or rail services over time. The model reflects these changes, for example through reductions in delay, or individuals' travel choices.

6.2 How accurate is it?

6.2.1 The model uses data from many sources to replicate the way people make choices. Whilst no model is perfect, it has been developed to a high level of accuracy that complies with DfT guidance.

6.2.2 Models are the best estimating tools we have and are a powerful aid to decision making. They are best used to compare the outcomes from different strategies. This is particularly useful for programmes such as the LDF and LTP, where the Council will want to have a strong evidence base to determine investment strategies.

7 How can it help in the LDF Process?

7.1 What are the challenges of the LDF process?

7.1.1 The LDF requires the planning authority to present documents that clearly demonstrate:

- How options were generated, assessed and selected or rejected
- That the preferred options are appropriate and sound
- What infrastructure is required
- Choices based on a robust and credible evidence base

7.2 How options were generated, assessed and selected or rejected?

7.2.1 The transport model will provide clear and objective data, e.g. the total delay on a particular corridor or the level of public transport use on a new service.

7.2.2 Using this information will allow the Council to demonstrate that decisions on options (from a transport perspective) have been made on the basis of clear numeric analysis.

7.3 Preferred options are appropriate and sound

7.3.1 From a transport perspective it will be possible to review the overall performance of the transport network, and detailed performance of individual elements. It will be possible to demonstrate through analysis how well the preferred option performs in terms of the core objectives identified.

7.4 What infrastructure is required?

7.4.1 The model will allow detailed analysis of the operation of the transport system. It will be possible to identify:

- Where queues and delays occur at junctions
- Where the levels of traffic on roads are close to capacity
- Where public transport services are over-crowded or under-used
- Where public transport services are being disrupted by congestion
- Where it is difficult to access particular facilities such as hospitals

7.4.2 The model will help assess the types of improvement required. This will ensure the right level and location of investment is identified.

7.5 Choices based on a robust and credible evidence base

7.4.1 The comprehensive database of information that the model represents will meet this requirement.

8 What the Model Cannot Do

8.1 Model inabilities

8.1.1 The model is a **representation** of traffic flows on the highway and public transport networks and is not therefore reality. Based on the best available and extensive data, it will predict typical transport flows but will not provide an absolute answer. The following limitations also exist:

- The model cannot predict traffic flows accurately on non-trunk/principal roads e.g. internal residential estate roads, where no existing traffic data exist. It may be possible to adapt local zone connector points however, to provide an indication of such flows, although this will normally require local traffic count data to be available;
- It cannot provide a design solution where queues currently exist or will form in the future. It can identify congested locations and provide an input to derive solutions and model the outcome using bespoke junction assessment tools, but the actual design will need to be generated externally;
- It cannot identify the best land use for an area. Such decisions must be made externally before the impact of the chosen land use development is assessed within the model;
- Modelling residential developments of less than 50 households will be impractical due to the low level of trips generated. The time and cost implications of assessing these in a strategic model must also be considered as it would still require the same time input as the assessment of a larger development. Only those exceeding 50 households should therefore be represented in the model. This is consistent with the local criteria set out for producing a TA;
- It cannot explicitly replicate measures proposed as part of development travel plans. These would be represented by changes to car occupancy and time of travel demand for developments where such plans exist, then applied externally to the model;
- Individual vehicle movements cannot be output as the model provides aggregate (i.e. hourly) information. It can provide the inputs to such programs however.

8.1.2 Despite these limitations, the model remains an industry-wide accepted and robust tool that can be used to assess the impacts of individual transport infrastructure schemes and a variety of land uses. It has the ability to provide objective comparisons of competing strategies.