



**Department of the Environment, Transport and the Regions**

**MULTI-MODAL STUDY  
A453 NOTTINGHAM TO M1 JUNCTION 24**

**WORKING PAPER NO 15**

**Revisions to Base Year Planning Data**

**June 2001**

**REVISION RECORD**

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## **1. INTRODUCTION**

### **Background**

- 1.1 Following the Project Management Group Meeting of the 18<sup>th</sup> April 2001, the Study Team were instructed (see items 4.3 and 4.4) to instigate an alternative approach to obtaining the necessary planning data for input into the modelling process. This was on the basis of the continuing problems with the accuracy and delivery, within a reasonable timescale, of the NTEM data. This data was sourced as far as possible and reported back to the PMG meeting of the 16<sup>th</sup> May 2001. In addition, a revised set of NTEM data was received and an initial assessment of the data carried out.
- 1.2 The purpose of this report is to update the work carried out in verifying a set of year 2000 planning data to be input into the transport modelling process. Similar work is being carried out in relation to data projections for the 2011 and 2021 time periods, however, priority has been given to ensuring accurate base year data at this stage.

## **2. DATA SOURCES**

- 2.1 In ensuring the accuracy of the revised set of NTEM data, the Study Team has compared this with locally derived population data from:
  - Nottinghamshire County Council;
  - Derbyshire County Council; and
  - Leicestershire County Council.

Checks on population have been taken as a proxy for checks on numbers of households.

- 2.2 The team has attempted to source similar detailed information for the 2000 base year in relation to employment. However, this has not proved fruitful from local sources. Whilst data is available from data company Cambridge Econometrics, there is a significant cost attached and in addition it appears through discussions with HETA that this data is in fact the basis for NTEM and therefore the team would be comparing like with like. For the purposes of the Study, therefore, the employment data provided by NTEM is taken as being accurate in the absence of any alternatives.
- 2.3 In verifying the NTEM data, this has been compared with 2000 population totals at ward level for the core districts relating to the Study Area, these being:

### **Nottinghamshire**

Ashfield  
Bassetlaw  
Broxtowe  
Gedling  
Mansfield  
Nottingham  
Rushcliffe

**Derbyshire**  
Derby City  
South Derbyshire  
Erewash

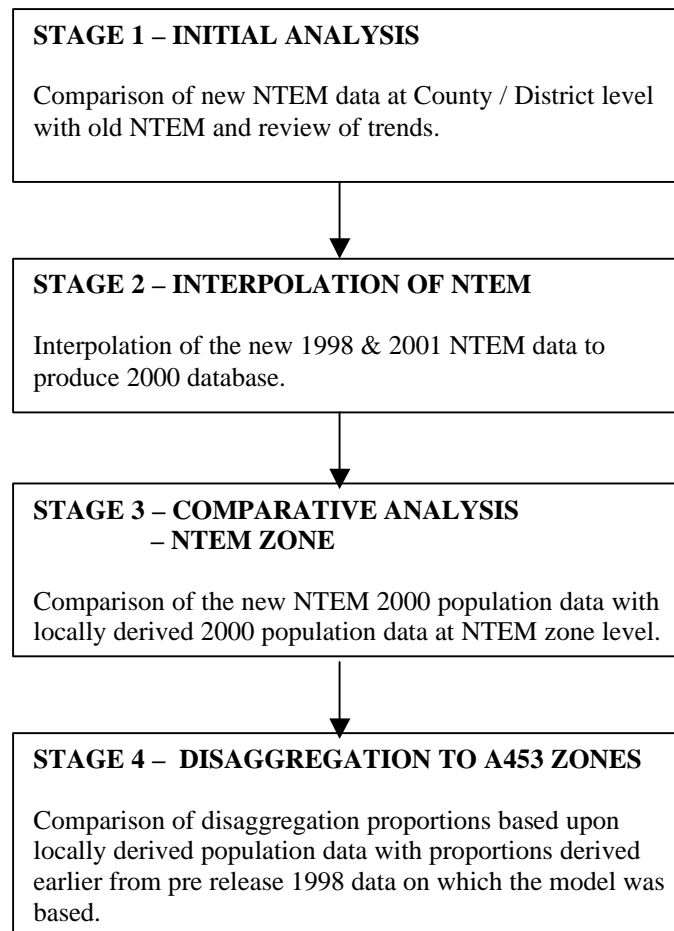
**Leicestershire**  
Charnwood  
Leicester City  
North West Leicestershire

- 2.4 Detailed population figures in relation to each of these districts at ward level are appended to this report at Appendix 1.

### **3. ANALYTICAL PROCESS**

#### **Approach**

- 3.1 The analytical process undertaken to verify an accurate set of year 2000 planning data is summarised on Figure 3.1 below:



Comparisons of total population also act as a proxy for household data. However, no independent data was available for employment to facilitate checking. This first round of checking was undertaken for total population rather than by Structure Group.

### **3.2 Stage 1 - Initial Analysis**

3.2.1 The analysis reported here relates to NTEM data made available to PFC from DETR on 5<sup>th</sup> May 2001 and it has been carried out for the years 1998, 2001, 2006, 2011 and 2021.

Essentially this comprised an examination of the projected growth in total population, household and employment (number of jobs) at District and County level over the forecasting period.

The results of this analysis indicated consistent and reasonable percentage changes and also consistency between forecasts of population, households and jobs over the period (2001 to 2021). The inconsistencies and unreasonable growth reported in Working Paper 9 had disappeared.

3.2.2 For example, the predicted growth in jobs over the forecast period for Gedling was 217% in the January data against -4% for 5<sup>th</sup> May data issue. This reduction -4% is consistent with the household reduction of -3% and population reduction of -9% over the same period.

Further detail of the analysis is given in Appendix 2.

### **3.3 Stage 2 - Interpolation of NTEM**

3.3.1 According to DETR advice regarding planning data for the year 2000, the Study Team interpolated the new 1998 and 2001 data to produce 2000 data for population, households and employment. Further detail is given in Appendix 3.

### **3.4 Stage 3 - Comparison of NTEM/Locally Derived 2000 Data for NTEM Zones**

3.4.1 The population totals received from each of the County Authorities were initially presented in the form of ward totals. However, in order to allow for comparison with the new 2000 NTEM total it was necessary to aggregate this data to NTEM Zone level (see Appendix 1).

3.4.2 The comparison of the NTEM data with the locally derived information resulting from the Stage 3 analysis has been carried out on two levels:

1. Correlation Coefficient<sup>1</sup>
2. Percentage Differences

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<sup>1</sup> This analysis tool and its formulae measure the relationship between two data sets. In our case NTEM and LA's population data

- 3.4.3 The results of the analysis carried out at NTEM zone level in relation to the correlation coefficient and the percentage differences are outlined in Appendix 4.
- 3.4.4 The results indicate correlation coefficients approaching one for each County (sub) area. This indicates a close relationship between the NTEM and locally derived population data.
- 3.4.5 Whilst the correlation coefficient analysis described above shows a very close relationship exists between the NTEM data and the locally derived data, the Study has been concerned to also illustrate the direct relationship between each of the analysed NTEM Zones. The percentage difference for the individual zones is also shown in Appendix 4. This shows that differences at the NTEM zonal level are generally less than 1% at District level. The small number of zones with differences over 5% are in the model external area, some distance from the main Study Area.
- 3.4.6 For Rushcliffe District, the balance between zone PN2 (West Bridgford) and PN1 (Remainder) was felt to be unacceptable and the Local Authority data is preferred on the basis of superior local knowledge.

### **3.5 Stage 4 – Disaggregation to A453 Zone Level**

- 3.5.1 This check was necessary because the planning data input to the model had been disaggregated from NTEM zone level to A453 zone level in the core of the modelled area using proportions based upon pre-release NTEM data for 1998 provided by HETA in summer 2000. This data had been shown suspect in WP9.
- 3.5.2 Checks of both correlation and difference were therefore made between the proportions based upon each data source.
- 3.5.3 The comparison shows a generally high degree of correlation between the two data sources. Comparison of the distributions to A453 zones was also good, but showing just sufficient difference in key areas to raise some concern. Adoption of proportions based upon the locally derived data seems preferable.

## **4. DISAGGREGATION TO STRUCTURE GROUPS**

- 4.1 Some of the Local Authorities had been able to provide disaggregate population data for amalgamations of the VISEM input structure groups, but others had been unable to do this within the demanding timescale required for the Study. Initial comparisons did show differences between the NTEM and LA data. However, given the limited coverage of the LA data and the daunting prospect of seeking similar data for forecast years the Study Team recommend the use of distributions based upon NTEM data.

## **5. CONCLUSIONS AND RECOMMENDATIONS**

- 5.1 Beyond the immediate area of interest comprising Nottinghamshire, East Derbyshire and North Leicestershire, the NTEM data provides the most appropriate data source, and no checks have been made beyond this area. The key objective of the analysis described in this report has been to obtain robust planning data for local Districts

comprising the modelled area or those likely to have significant influence on movements in the Study Area.

- 5.2 Checks have only been possible on population, and by proxy, household data. To date, no independent source of employment data has been identified.
- 5.3 The correlation between the latest NTEM data and Local Authority data for population is most encouraging and suggests that problems previously afflicting the NTEM data have, at long last, been overcome.
- 5.4 The Study Team now consider that the most appropriate data source for the base year, 2000 would comprise the following:
  1. Adopt NTEM (new) as the prime data source
  2. For Rushcliffe District (only)
    - Rebalance population/households between NTEM zones PN1 and PN2 to match Local Authority data
  3. For disaggregation to A453 zones for Nottingham, Gedling, Broxtowe, Rushcliffe, Erewash, and North West Leicestershire
    - Use proportions (of NTEM zones) calculated from Local Authority data provided at Ward level
    - Where A453 zones are smaller than Wards, use proportions based upon team local knowledge
  4. For disaggregation of zone totals of population, households and employment to model structure groups, use NTEM data.
- 5.5 The above approach is considered to provide the most appropriate blend of DETR and local data, given that the full data requirement is also needed for forecast years.



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**APPENDIX 1**

**DETAILED POPULATION TOTALS  
PROVIDED BY LOCAL AUTHORITIES**



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**APPENDIX 2**

**ANALYSIS FOR PLANNING DATA  
PROVIDED BY DETR ON 5<sup>TH</sup> MAY 2001**



**APPENDIX 3**

**INTERPOLATION OF NTEM POPULATION DATA  
FOR YEAR 2000**



**APPENDIX 4**

**CORRELATION TEST AND % DIFFERENCE  
BETWEEN NTEM POPULATION AND LA'S**



**APPENDIX 5**

**CORRELATION BETWEEN THE DISAGGREGATION  
OF NTEM AND LA'S PLANNING DATA FOR YEAR 2000**