6. THE STRATEGIC TRANSPORT MODEL

6.1 The Strategic Transport Model

In recent years there has been increased debate at local and national level regarding the interaction between the demand for travel and our living environment. In particular there is increasing concern about the impact of the private car on our towns and cities in terms of congestion, atmospheric pollution and associated health concerns, severance and loss of amenity, and the implications for land use policy.

Current government policy encourages local authorities to develop land use and transportation strategies that reduce reliance on the private car in favour of more sustainable modes such as bus, rail, cycling, and walking. At the same time, government planning policy guidance highlights the requirement to retain and sustain the vitality and viability of our city and town centres.

Local authorities are actively involved in implementing integrated strategies, tailored to the local context, to achieve these objectives. Successful strategies contain elements of both 'carrot' and 'stick'. Improving facilities and services for public transport users and non-motorised modes, whilst utilising mechanisms such as the control of parking supply and prices and reduced highway capacity (for example through the introduction of bus and high occupancy vehicle lanes), in order to encourage modal shift. In addition, there is growing interest in the general concept of road pricing.

Transport modelling plays an important role in the demonstration of the relative merits of proposed schemes in achieving local authority objectives. Ideally, a conventional four-stage transport model might be used. However the degree of complexity (and financial cost) of such models has grown in recent years, in response to the demand for the capability to represent multiple modes, and to model the responses to a wide range of different policy options. Such models require large amounts of high quality travel survey data for calibration and validation, which is expensive to collect and may not always be available.

The Strategic Transport Model (STM) is a flexible multi-modal modelling tool designed to assist Town and Transport Planners in making informed and appropriate transport policy decisions. STM is a highly aggregate strategic transport modelling product designed for ease of use, and with the ability to assess urban transport policy impacts rapidly with limited data requirements.

One of the main strengths of STM is its ability to provide an assessment of the potential effects of a large number of policy levers in a short timescale - it is best used for strategic policy assessment. The main characteristics of STM are as follows:

- Highly aggregate zone structure.
- Area-wide speed flow curves.
- Rapid convergence to equilibrium.
- Rich in behavioural detail.

The Strategic Transport Model provides local authorities, regional planning authorities and their agents with a means of forecasting the relative impact of various transport policy instruments, individually or in combination, in a cost effective way. The current version of STM will allow the user to assess the strategic impact of regional and urban area transport policy changes, such as:

- Road user charging.
- Changes in parking supply and charges.

- Changes in public transport services.
- Public transport fare schemes.
- The impact of new Park and Ride schemes.
- The impact of a new light rail scheme.

These basic growth factors have been adjusted for certain zones in the model that represent areas of targeted regeneration or development that was not included in the TEMPRO factors. Major committed schemes due to be constructed during the LTP2 period are also included to allow the model to make a realistic modal choice in the 2011 scenarios. These schemes are:

- Leeds Inner Ring Road Stage 7.
- East Leeds Link.
- Glasshoughton Link.
- Hemsworth by-pass to A1 Link.

6.2 Strategic Transport Model Outputs

6.2.1. Air Quality

Figures 6.1 & 6.2 show the predicted changes in NO_x and PM_{10} emissions for each zone of the Strategic Transport Model by 2011. For the purpose of this assessment, reductions expected due to improved technology have been omitted, and only the changes predicted as a direct result of the LTP2 strategies being implemented are shown.

The benefits of the LTP2 strategy are shown to be expected predominantly around the central urban areas. In addition, the majority of the AQMAs and Areas of Concern in West Yorkshire are in areas expected to experience reductions in emissions as a result of LTP2 schemes being implemented, over and above general reductions as a result of improved engine technologies, etc.

Figure 6.1:

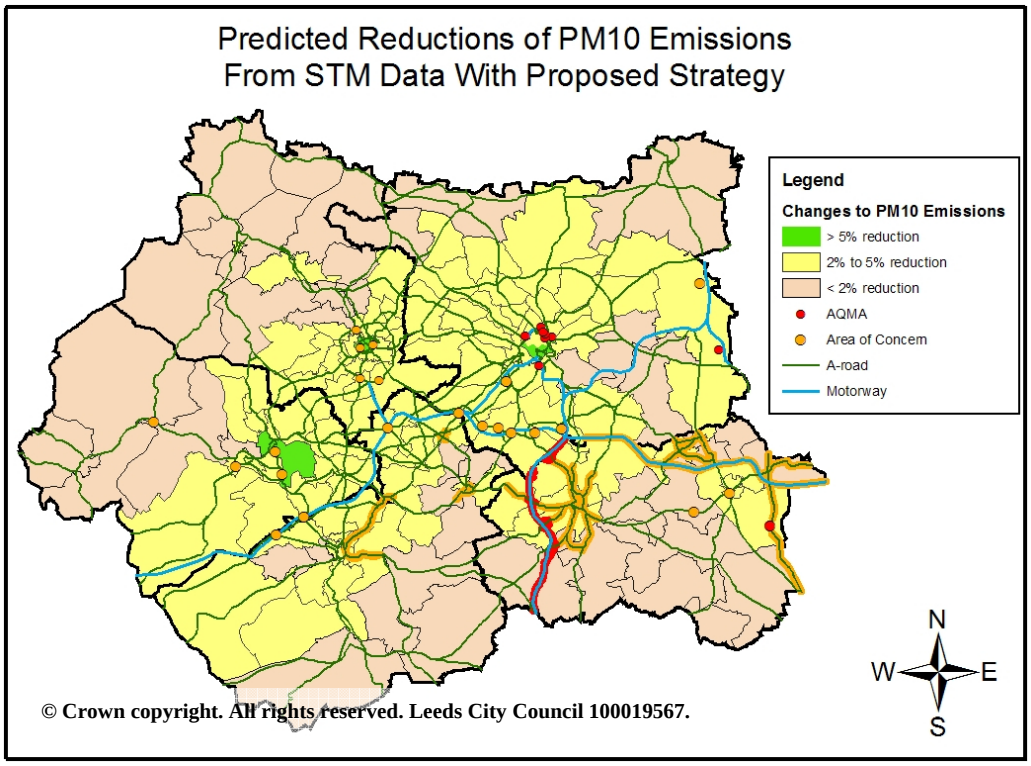
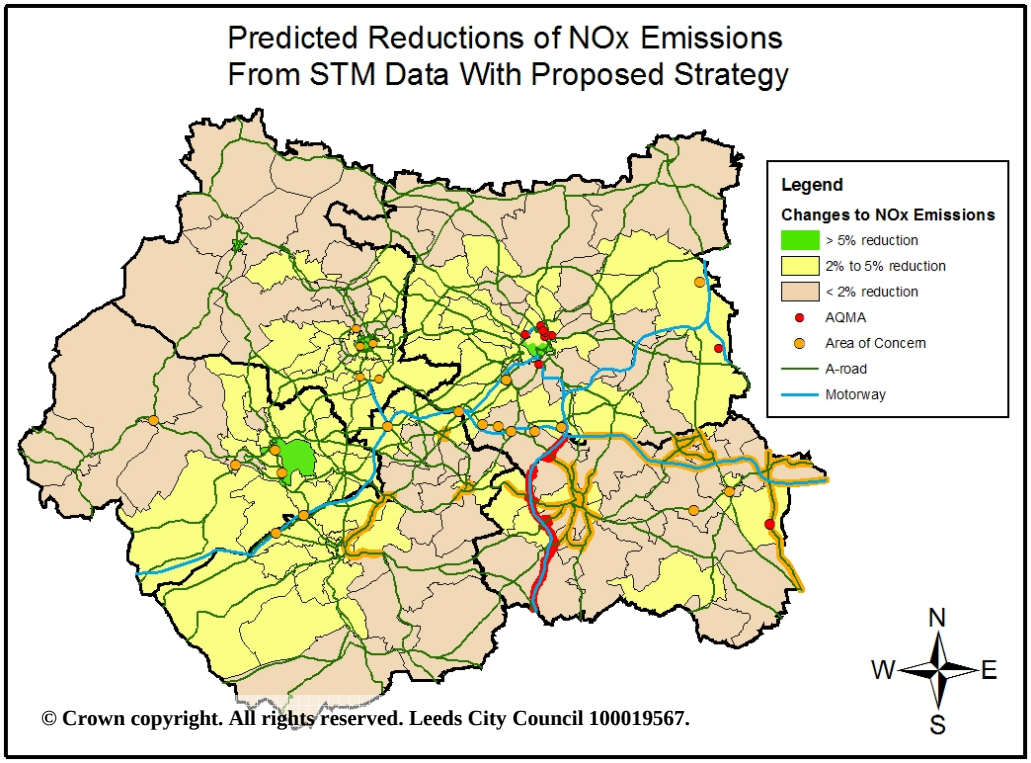


Figure 6.2:



6.2.2. Carbon Dioxide Emissions

Figure 6.3 shows the spatial variation in changes to CO_2 emissions predicted across West Yorkshire by 2011. The map shows the aggregate percentage change expected between 2006 and 2011 depending on whether the LTP2 strategies are implemented or not.

However, CO_2 emissions are a global problem and the location of any change is not a crucial factor in determining how important that change is. The map in figure 6.3 indicates that the LTP will deliver around a 2% drop by 2011 in CO_2 emissions across Kirklees as a whole. However figure 6.4 shows that the increase expected in Kirklees without the intervention of the LTP2 is such that there is likely to be a small net increase in CO_2 emission overall across Kirklees. Despite this, taking West Yorkshire as a whole, the LTP strategy is predicted to deliver a net fall in CO_2 emissions of nearly 3% by 2011. Although this is a small percentage change, it does demonstrate that the LTP2 can help reverse the recent trend of increasing CO_2 emissions from the transport sector.

Figure 6.3:

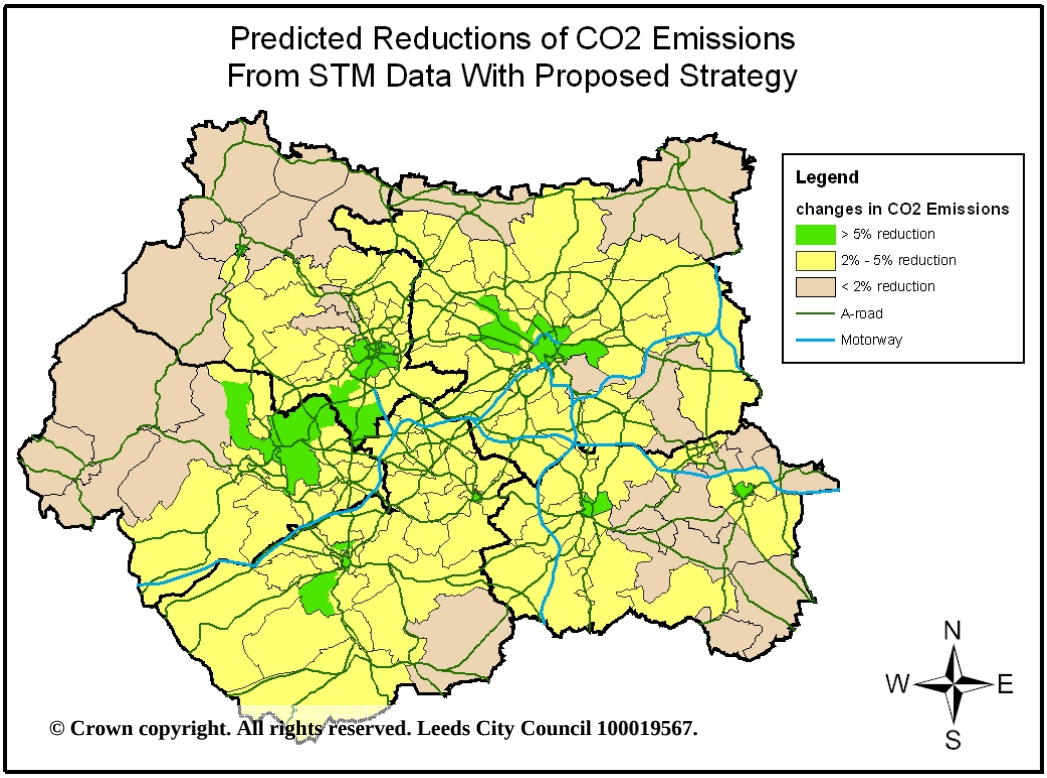


Figure 6.4: Percentage change of CO_2 emissions between 2006 and 2011