

Delivering a Sustainable Transport System: City and Regional Networks Data Book

March 2009

Contents

List of annexes	2
Introduction.....	3
Chapter 1 Support economic growth.....	7
1.1 Travel Patterns.....	7
1.2 Forecast demand for travel	10
1.3 Productivity.....	12
1.4 Labour Markets	13
1.5 Lost time and reliability.....	14
1.6 Resilience.....	16
1.7 National Networks	17
1.8 International Networks	17
1.9 The Logistics Perspective	19
Chapter 2 Tackling Climate Change	21
2.1 Local	21
2.2 Regional.....	21
2.3 Carbon data and analysis	22
Chapter 3 Contribute to better safety, security and health	24
3.1 Safety.....	24
3.2 Road safety good practice	24
3.3 Transport safety data	25
3.4 Health.....	26
3.5 Air Quality.....	27
3.6 Crime	28
Chapter 4 Promote equality of opportunity.....	29
Chapter 5 Improve quality of life and a healthy natural environment	31
5.1 Noise.....	31
5.2 Journey Experience	32

List of annexes

- Annex 1** [Regional maps showing Local Authority Districts](#)
- Annex 2** [Commuting trips to and from cities in each region](#)
- Annex 3** [Regional maps showing top 50 commuter flows into and out of each Local Authority District](#)
- Annex 4** [Regional maps showing the mode share of commuting trips terminating in each Local Authority District](#)
- Annex 5** [Regional summary table of TEMPRO 6 outputs for 2006 and 2026](#)
- Annex 6** [National and regional maps showing forecast growth in total population \(2006 to 2026\)](#)
- Annex 7** [National and regional maps showing forecast growth in numbers of households \(2006 to 2026\)](#)
- Annex 8** [National and regional maps showing forecast growth in employment \(2006 to 2026\)](#)
- Annex 9** [National and regional maps showing forecast growth in car ownership \(2006 to 2026\)](#)
- Annex 10** [National and regional maps showing forecast growth in numbers of trips \(2006 to 2026\)](#)
- Annex 11** [Regional maps of GVA per filled job \(2005\) and growth in GVA per filled job \(2001 to 2005\)](#)
- Annex 12** [Regional maps of key employment areas and a map of Function Urban Areas \(FURs\) in England](#)
- Annex 13** [Examples of travel time maps](#)
- Annex 14** [Maps of average delay on the roads \(2003 and 2025\)](#)
- Annex 15** [Maps of overcrowding on the railway network \(2006/07 and 2013/14\)](#)
- Annex 16** [Examples of analysis of travel to and from international ports and airports](#)
- Annex 17** [National and regional maps of CO₂ emissions from road transport per capita by Local Authority \(2006\)](#)
- Annex 18** [National map and regional maps of CO₂ emissions on the road network \(2006\)](#)
- Annex 19** [Examples of mapping all domestic transport CO₂ emissions](#)
- Annex 20** [Regional analysis of car travel by journey purpose and journey length](#)
- Annex 21** [Regional maps of road casualties by Local Authority District \(2005 to 2007 compared with 2001 to 2004\)](#)
- Annex 22** [Regional maps of rates of road casualties on major roads](#)
- Annex 23** [Examples of mapping air quality \(2006\)](#)
- Annex 24** [National and regional maps of the Index of Multiple Deprivation \(2007\)](#)
- Annex 25** [Example of DEFRA noise maps](#)

Introduction

1. In *Delivering a Sustainable Transport System (DaSTS)*¹ and the associated *Draft Guidance to Regions*², the Department for Transport (DfT) committed to sharing information with regions that may help them consider their transport priorities. This document fulfils that commitment by presenting and referring to national datasets and forecasts which relate to the Government's transport goals and challenges, set out in *DaSTS*. The purpose of this document is to allow parties in each region to begin a dialogue with each other and with the DfT on where transport pressures and related problems are likely to be greatest, to inform the process of setting regional transport priorities in the context of *DaSTS*.

Context

2. In October 2007 the DfT published the document *Towards a Sustainable Transport System (TaSTS)*³ which set out the Government's approach to strategic transport planning for 2014 and beyond. *TaSTS* set out an approach for implementing the recommendations of The Eddington Study⁴ and reflected the findings of the Stern Review⁵ of the economics of climate change.
3. Building on Sir Rod Eddington's recommendations, *TaSTS* proposed a four-step process:
 - clarifying the goals of transport policy;
 - specifying the challenges to be addressed on each of the three types of network (city and regional, national and international) and on a cross-network basis;
 - generating a range of cross-modal options to address the challenges, looking at the role of regulation and price as well as infrastructure;
 - appraising the options on the basis of their delivery against the transport goals and their value for money.
4. Since publishing *TaSTS*, the Government has engaged widely including informally consulting on transport goals and challenges that should drive the process of developing transport solutions.
5. In November 2008 the Department published *Delivering a Sustainable Transport System (DaSTS)* which set out five broad goals that capture the full range of Government objectives that can be furthered by transport.

¹ <http://www.dft.gov.uk/about/strategy/transportstrategy/dasts/>

² <http://www.dft.gov.uk/pgr/regional/strategy/dasts/dastsguidance>

³ <http://www.dft.gov.uk/about/strategy/transportstrategy/pdfsustaintranssystem.pdf>

⁴ <http://www.dft.gov.uk/about/strategy/transportstrategy/eddingtongstudy/>

⁵ http://www.hm-treasury.gov.uk/sternreview_index.htm

DaSTS included a formal consultation on the transport goals, challenges and the process involved to take this work forward.

6. The five broad goals of transport, set out in *DaSTS* are:
 - To **support** national **economic** competitiveness and **growth**, by delivering reliable and efficient transport networks;
 - To reduce transport's emissions of carbon dioxide and other greenhouse gases, with the desired outcome of **tackling climate change**;
 - To **contribute to better safety security and health** and longer life-expectancy by reducing the risk of death, injury or illness arising from transport and by promoting travel modes that are beneficial to health;
 - To **promote** greater **equality of opportunity** for all citizens, with the desired outcome of achieving a fairer society;
 - To **improve quality of life** for transport users and non-transport users, and to promote a **healthy natural environment**.

City and Regional Networks

7. The DfT published *Draft Guidance to Regions on Delivering a Sustainable Transport System* alongside *DaSTS* to describe the work that regions will be invited to undertake to influence the Government's decisions on transport investment from 2014 onwards.
8. Much responsibility for planning and delivering transport is devolved to regions. They need to reach views on options and priorities, taking into account their wider work on regional strategies and the interface with decisions on economic development and land use. Regions will lead the work on the city and regional network, working closely with the DfT as it develops options for national and international networks.
9. The city and regional network is defined in *DaSTS: Consultation on planning from 2014 and beyond*⁶. The city and regional network consists of the highways and rail networks, other than those routes defined as strategic national corridors, and rail service groups, other than those identified as providing strategic connectivity.
10. This paper includes references to published information and presents some data not previously published. The focus is on data and forecasts available from DfT, but some other data sources are also referenced. Other government departments, including DCLG, DEFRA and ONS, also provide a range of statistical outputs that may be of use in helping to determine strategic priorities, and options to meet them.

⁶ <http://www.dft.gov.uk/consultations/open/planning/>

11. National datasets are not the only source of information. Regional bodies and local authorities are likely to have access to other data which may be of use. With that in mind, what follows is not intended to be exhaustive, but rather to indicate some of the data and forecasts that might be helpful. Regions and partners will have flexibility to develop their own priorities and solutions in light of their own regional context, which will vary across regions.
12. The Department will offer to hold discussions on this data book in each region. This will provide an opportunity for stakeholders to highlight where they think useful data sources are missing from this paper and to discuss potential areas of development in terms of improving the range of available information.
13. The DaSTS process for regions does not apply to Greater London, where transport is the responsibility of the Mayor of London and Transport for London. Nonetheless, some of the data and maps presented in this document include London because of its relevance to surrounding regions and for the sake of comparison.
14. In addition to the material described in the remainder of this document, the Department recently published a *Policies and Best Practice Handbook* which provides sources of guidance and national policy documents on most aspects of the DaSTS goals. This can be found at <http://www.dft.gov.uk/consultations/open/draftguidance/tp/policiesbestpracticehandbook.pdf>.

National and International Networks

15. Building on analysis in The Eddington Study, *TaSTS* identified three main types of network – city and regional, national and international – as the basis for option generation. In practice, individual journeys (for example from home to airport) typically use more than one of these networks. From the user's perspective, the distinction may therefore seem somewhat artificial. Nevertheless, from a delivery perspective it is important to be clear who will actually lead the process of option generation in each case, to define where responsibilities start and end and ensure that policy options are joined up between networks
16. We are working on the basis that the Government will take the lead in commissioning work on national policy measures, such as regulation, which cut across network boundaries, as well as on option generation for national and international networks, but that it will be for regions and local authorities to do so for city and regional networks.
17. For international networks, the Department will be focussing on the key international gateways (detailed in section 1.8) which are strategically important for the flow of passengers and goods in and out of the country. We recognise that international gateways are of significant economic importance to the region in which they are situated; it will be for the regions

to ensure that these ports and airports (and access to them) are considered in the region's option generation process. The Department will work with the regions to discuss priorities and ensure a suitable way forward can be found where international, national and regional challenges need to be considered together.

18. For national networks, the Department will lead on the 14 strategic national corridors (defined in *DaSTS*), and will engage with the regions and other relevant stakeholders. There could be a limited number of joint studies with regions around certain hotspots.

Transport Statistics Contacts

19. Contact details for all areas of DfT statistics are available at <http://www.dft.gov.uk/pgr/statistics/transportstatisticscontactde5478>

Chapter 1 Support economic growth

20. Transport's key economic role is to support the success of the UK's highly productive economic centres and to enable the efficient movement of goods and people.
21. The Eddington Transport Study concluded that, while the basic connectivity of the UK transport network is good, congestion and unreliability at certain places at certain times of the day constrain our economic growth. It recommended that our focus should be on improving the performance of existing networks, by targeting additional capacity on where this is needed to meet growing demand.
22. There are two other strategic criteria that will guide our choices about networks: the connectivity of the transport system as a whole that allows people to get to work, schools, hospitals and to access a wide range of services and allows the freight sector to deliver goods; and its resilience to cope with, and recover from, potential major disruptions from events such as severe weather, the impacts of climate change or terrorism and more gradual but equally powerful factors such as changes in the pattern of economic activity or in people's lifestyles.
23. The Eddington Study outlined seven ways in which transport can impact on productivity as outlined in **Box A**, below.
24. The rest of this Chapter refers to national data and forecasts which may help identify how people and goods travel and where growth in demand for travel is likely to occur, along with associated problems such as congestion and unreliability. The sources referred to are not exhaustive and we expect that local and regional data and modelling will be used to consider where transport could be a constraint on economic growth.

1.1 Travel Patterns

25. This section refers to national and regional statistics which can help provide information on how people and goods travel and about the networks on which they travel. Other sources of statistics are referred to throughout the remaining sections and chapters of this document.

1.1.1 Transport Statistics Great Britain

26. *Transport Statistics Great Britain* (TSGB) is a National Statistics publication produced by DfT that provides a comprehensive picture of transport patronage in Great Britain. *Transport Statistics Great Britain: 2008 edition* can be found at <http://www.dft.gov.uk/pgr/statistics/datatablespublications/tsgb/2008edition/>.

27. *Transport Trends* is a companion volume to *Transport Statistics Great Britain*. It presents an overview and analysis of trends in transport and travel in Great Britain over the past twenty five years, and highlights some of the key issues. It can be found at <http://www.dft.gov.uk/pgr/statistics/datatablespublications/trends/>.

Box A Transport and Productivity

The Eddington Study identified that transport can influence productivity through seven mechanisms, or micro drivers:

- i. Increasing business efficiency, through time savings and improved reliability for business travellers, freight and logistics operations.
- ii. Increasing business investment and innovation by supporting economies of scale or new ways of working.
- iii. Supporting clusters and agglomerations of economic activity. Transport improvements can expand labour market catchments, improve job matching, and facilitate business to business interactions. Transport's contribution to such effects is most significant within large, high-productivity urban areas of the UK.
- iv. Improving the efficient functioning of labour markets, increasing labour market flexibility and the accessibility of jobs. Transport can facilitate geographic and employment mobility in response to shifting economic activity, for example in response to the forces of globalisation, new technological opportunities, and rising part-time and female participation in the labour market.
- v. Increasing competition by opening up access to new markets. Transport improvements can allow businesses to trade over a wider area, increasing competitive pressure and providing consumers with more choice.
- vi. Increasing domestic and international trade by reducing the costs of trading.
- vii. Attracting globally mobile activity to the UK by providing an attractive business environment and good quality of life.

1.1.2 Regional Transport Statistics

28. *Regional Transport Statistics* is a National Statistics publication produced by DfT that is intended to complement TSGB, bringing together a wide range of transport statistics for Great Britain at Government Office Region (GOR) and former metropolitan county level. For example, it contains a regional GVA series, and estimates and projections on the number of households, in

Chapter 9. Key regional statistics on journey times to work and on public transport are in Chapters 1 and 2. Road traffic data are held in Chapter 4, and road maintenance information in Chapter 5. Freight statistics, including road goods moved and lifted by origin and destination, and freight traffic at ports in Chapter 7. Aviation statistics are available in Chapter 8. *Regional Transport Statistics: 2008 edition* can be found at <http://www.dft.gov.uk/pgr/statistics/datatablespublications/regionaldata/rtstats2008>.

1.1.2 National Travel Survey

29. The National Travel Survey (NTS) is a household survey which collects information on travel patterns in Great Britain. The survey collects data from approximately 8,000 households, containing around 19,000 individuals, each year. Information on the household, each individual within the household and any vehicles to which the household has access, is collected via a face to face interview. Each household member is then asked to record details of their trips over a 7 day period. Data on travel patterns can therefore be linked to information on individual, household and vehicle characteristics. Because of the survey sample size, regional results have to be average over several years. For more information and data, see <http://www.dft.gov.uk/pgr/statistics/datatablespublications/personal/>.

1.1.3 Commuter travel patterns

30. 2001 Census travel to work data provides the origin and destination of commuting trips at a local level (by Super Output Area), the mode of transport and information about the commuter such as age and occupation.
31. The following sets of maps show Census travel to work data by Local Authority District for each of the nine English Government Office Regions (GOR), with the exception of London in the case of Annex 2:
- **Annex 2** contains maps of commuting trips to and from cities in each region;
 - **Annex 3** contains regional maps showing top 50 commuter flows into and out of each Local Authority District;
 - **Annex 4** contains regional maps showing the mode share of commuting trips terminating in each Local Authority District.
32. The DfT has used the information from Census travel to work data to provide origin-destination matrices suitable for transport planning. The Census Matrix Tool is available at <http://www.peter-davidson.com/cmtrelease.htm>.
33. Full travel to work data sets which underlie the above maps can be obtained from the ONS. The ONS also provides a data visualisation product called

CommuterView. This uses Census travel to work data to create interactive maps, allowing the user to investigate commuting patterns within any given area down to Super Output Area (SOA) level. It is distributed on DVD and is available by emailing better.info@ons.gov.uk and has recently become available online via the following site

<http://www.ons.gov.uk/census/2011-census/news-and-events/uk-travel-flows/index.html>.

34. The Census provides a snapshot of historic travel to work patterns. Ideally analysis of travel patterns would be based on transport modelling of future patterns which necessitates consideration of land use changes, demographic changes and many other factors. The Department provides some tools to help do this, set out below.

1.2 Forecast demand for travel

35. Forecasts of the future are always subject to uncertainties and new Government policies will also help determine future trends. Nonetheless the Department, and other stakeholders, make various forecasts for the purpose of transport planning and modelling. Some of these are set out below and in the remainder of this document.

1.2.1 TEMPRO - DfT forecasts of planning data and trips

36. The DfT's Trip End Model PROgramme (TEMPRO) provides access to National Trip End Model (NTEM) projections of growth in travel demand and underlying car ownership and planning data projections. TEMPRO has been developed to provide suitable growth factors for input in to multi-modal transport models. TEMPRO provides data at a detailed level of geography – it has over 2,500 zones (know as NTEM zones). It provides estimated data and forecasts for years 1991 through to 2041 based on changes through time applied to the 2001 base year.
37. TEMPRO acts a nationally consistent benchmark for the distribution of changes in planning data and trips. This benchmark allows consistency between different parts of the country when justifying transport proposals, as well as reducing the risk of optimism bias. TEMPRO is designed so that data for each region can be individually updated, without changes to the software. As each region issues new regional planning guidance, or carries out a new consultation on likely patterns of development within the region, DfT will work with the Government Office and/or regional planning body to produce a new TEMPRO dataset for that region.
38. In this data book we have used TEMPRO version 6.0 data to produce the maps and tables presented. The current version of TEMPRO data is version 5.4, and this will remain the definitive version until April 2010. The new 6.0 version was released in January 2009, but this dataset will now be for consultation only. As the data is still being consulted on the maps and charts

based on this data should be seen as illustrative. The TEMPRO programme and datasets are available at <http://www.tempro.org.uk/>. A guide to the data and forecasts, TEMPRO planning guidance note, is also available at <http://www.dft.gov.uk/pgr/economics/rdg/pgetemproplandataguidntes>. Finally, for more details on using TEMPRO in transport modelling and appraisal see DfT Transport Analysis Guidance - TAG Unit 3.15.2 Use of TEMPRO data at http://www.dft.gov.uk/webtag/webdocuments/3_Expert/15/pdf/3.15.2-draft.pdf.

39. TEMPRO datasets get updated and revised in light of new data becoming available and as any issues with the datasets are identified and rectified. As future updates are released the material in the following annexes would also need to be updated accordingly. Until TEMPRO 6.0 data is formalised following consultation, there may be value in looking at TEMPRO version 5.4 data.
40. **Annex 5** provides a regional summary table of TEMPRO 6 outputs by region for 2006 and 2026 for: total population; total number of households; average household size; employment (number of jobs); car ownership (total number of cars); total number of trips (total number of trips starting in the region in an average week).
41. The following sets of maps show TEMPRO data by NTEM zone, annexes contains a national map and maps for each of the nine English GORs:
 - **Annex 6** contains maps showing forecast growth in total population (2006 to 2026);
 - **Annex 7** contains maps showing forecast growth in total number of households (2006 to 2026);
 - **Annex 8** contains maps showing forecast growth in employment (2006 to 2026), this is a long term forecast which is not used to make any judgement about the shorter term economic cycle;
 - **Annex 9** contains maps showing forecast growth in car ownership (2006 to 2026); and,
 - **Annex 10** contains maps showing forecast growth in total numbers of trips (2006 to 2026).

1.2.2 National Transport Model

42. The National Transport Model (NTM) is the Department's multi-modal model of land-based transport in Great Britain. It comprises six modes - car driver, car passenger, rail, bus, walk and cycle – and has two main objectives:
 - to produce forecasts in a future year of the main transport indicators - traffic, congestion, and emissions;

- to provide a policy and scenario testing tool by estimating the impact of a transport policy scenario or a change in forecasting assumption.
43. In December 2008 the DfT published *Road Transport Forecasts 2008*, this contains forecasts of road traffic growth, congestion, journey times and emissions from the NTM. Forecasts are provided up to 2025 at <http://www.dft.gov.uk/pgr/economics/ntm/roadtransportforecasts08/> with regional forecasts by road type, area type and vehicle type available at <http://www.dft.gov.uk/pgr/economics/ntm/roadtransportforecasts08/trafficforecasttables.xls>.

1.2.3 Air Passenger Demand Forecasts

44. The DfT's UK air passenger demand forecasting model provides forecasts of air passenger demand nationally, and at the UK's 31 largest airports. It also provides forecasts of air passengers' ground origins/destinations in the UK. The latest national and airport demand forecasts were published in January 2009, and are available at <http://www.dft.gov.uk/pgr/aviation/atf/>.

1.2.4 Local and Regional Transport Models

45. The DfT provides guidance on how to construct transport models and appraise transport options in its Transport Analysis Guidance. For example, *Unit 3.15 Forecasting Using Transport Models* at http://www.dft.gov.uk/webtag/webdocuments/3_Expert/15/index.htm.
46. The DfT has undertaken a review into local and regional modelling capability. The research has assessed a range of models assessed and their suitability for the sort of analysis which might be undertaken for DaSTS. The results of this research will inform discussions between the Department and stakeholder on improving the modelling and analytical capacity of the regions.

1.3 Productivity

47. The ONS recommends using GVA per filled job for productivity measurement at a local level. See for example the National Statistician's article, *Measuring regional economic performance*, which aims to inform discussion about GVA per head limitations in measuring productivity of a region and its residents' income at <http://www.statistics.gov.uk/cci/article.asp?ID=2103>.
48. The latest regional GVA per filled job estimates go up to 2007 and can be found at www.statistics.gov.uk/notices/prod_measures_region_11Feb09.asp. These estimates make use of the latest revised GVA and workforce jobs statistics. At sub-regional level, revised jobs estimates (used as the denominator in the

productivity measure) are not yet available; they will be published in mid-2009.

49. **Annex 11** makes use of unrevised estimates of GVA and sub-regional jobs. It contains maps of GVA per filled job estimates for 2005 at the NUT3 classification level for each of the nine English GORs. It also contains growth in GVA per filled job between 2001 and 2005 and a regional summary table of GVA per job filled for 2005.
50. In December 2008 ONS published GVA and GVA per head estimates at regional and sub-regional level. Regional productivity estimates in terms of GVA per filled job and GVA per hour worked have been published on 11 February 2009. The ONS Centre for Regional and Local Statistics plans to do further work in 2009 on sub-regional and sectoral productivity estimates in terms of GVA per filled job and GVA per hour worked. The geographic and sectoral detail will depend on the quality of the estimates.

1.4 Labour Markets

51. A key economic role of transport is improve the connectivity and access to labour market of key business centres.
52. It may be helpful to define where key employment centres are. One way to do this is to use Census travel to work data on the destination of commuter trips. **Annex 12** contains maps showing key employment areas for each of the nine English GORs. Census data provides a historic snapshot. Section 1.2 outlines how the Department provides nationally consistent forecasts of planning data such as growth in employment and population at a local level.
53. **Annex 12** also contains a national map (Map A12.10) showing Functional Urban Regions (FURs). Functional Urban Regions are contiguous geographical areas representing the economic boundaries of cities. Urban cores are defined as wards where job density exceeds 7 jobs per hectare. Around this core a commuting field is identified, by adding adjacent wards where at least 10% of the residential population regularly commute to the core for work. Together the core and the commuting field make up the FUR. Schemes in these areas are particularly likely to increase the accessibility of key business centres to a large base of workers as well as improving the scope for firms to do business with one another, thus impacting on the level of 'agglomeration'. This is likely to mean that transport schemes in these areas have significant affects on productivity. The Department plans to publish guidance on taking account of these wider impacts on productivity in appraisal on <http://www.dft.gov.uk/webtag/> in Spring 2009. This guidance will contain a list of wards which are located in the FURs in Map A12.10.
54. The DCLG provide a *State of the Cities Database* which provides access to a broad range of statistical data and information at several geographic levels (e.g. Cities, City Regions, Town Centres, Local Authorities and Regions) at <http://www.socd.communities.gov.uk/socd/download.aspx>.

55. Travel time maps show how long it typically takes to travel to or from a particular destination. They could be used to indicate the potential access to labour markets of key economic centres, within a given travel time and how that might change over time or with some policy intervention.
56. By way of example **Annex 13** contains three examples of travel time maps. Map A13.1 of Manchester and Map A13.2 of Barnsley use data from travel time matrices which underpin the core accessibility indicators. Regions or local authorities could commission equivalent data, or use travel time data through the National Public Transport Data Repository (NPTDR <http://www.nptdr.org.uk/>) alongside their own data with Accession (or other accessibility planning software). Most local authorities will be familiar with these data, having used them in their Local Transport Plans (LTP) and National Indicator 175 accessibility indicators. Map A13.3 shows travel time contours for travelling to the DfT premises in London. It was produced by mySociety using data from Transport Direct and TfL's journey planners, for more information see <http://www.mysociety.org/2007/more-travel-maps/>.

1.5 Lost time and reliability

57. Reducing lost productive time and improving reliability is also a key transport challenge. If left unchecked, The Eddington Transport Study found that the rising cost of congestion on the road could waste an extra £22 billion worth of time in England alone by 2025 (estimated using the DfT National Transport Model).
58. *Road Statistics 2007: Traffic, Speeds and Congestion* is a National Statistics publication produced by DfT on road traffic, free flow vehicle speeds in Great Britain, and traffic speeds in England. It can be found at http://www.dft.gov.uk/162259/162469/221412/221546/226956/261695/roads_tats07tsc.pdf.
59. The DfT has a Public Service Agreement (PSA) indicator on journey time reliability on the strategic road network (where reliability is defined as the average vehicle delay of the slowest 10% of journeys). For congestion statistics on inter-urban roads see *Road Statistics 2007* (Chapter 4) at http://www.dft.gov.uk/pgr/statistics/datatablespublications/roadtraffic/speed_scongestion/congestiononthestrategicroad5359 and updated road traffic and congestion statistics at http://www.dft.gov.uk/pgr/statistics/datatablespublications/roadtraffic/traffic_gbtrafficgb/. For information on the Departments PSA indicators see <http://www.dft.gov.uk/about/publications/apr/ap/autumnperformance08.pdf>.
60. The DfT also has a PSA indicator on journey times on main roads into the 10 largest urban areas in England: London, Greater Manchester, Merseyside, South Yorkshire, Tyne & Wear, West Midlands and West Yorkshire, Bristol, Leicester and Nottingham. Congestion in urban areas is measured by "person journey time per mile". For congestion statistics in these urban areas see *Road Statistics 2007* (Chapter 5) at

<http://www.dft.gov.uk/pgr/statistics/datatablespublications/roadtraffic/speedscongestion/congestiononthe strategicroad5359> and updated road traffic and congestion statistics at <http://www.dft.gov.uk/pgr/statistics/datatablespublications/roadtraffic/traffic/qbtrafficgb/>. For information on the Departments PSA indicators see <http://www.dft.gov.uk/about/publications/apr/ap/autumnperformance08.pdf>.

61. LAA indicator 167 provides information at Local Authority level on the level of congestion during morning peak times, similar to the DfT PSA indicator on journey times in urban areas. Each authority uses one of three methodologies in reporting the indicator, which use DfT data or a combination of DfT and local level data. The 2007/08 data will be available centrally from the DCLG's Hub website in early Summer 2009 at <http://www.communities.gov.uk/localgovernment/performanceframeworkpartnerships/nationalindicators/datainterchangehub/>.
62. Congestion forecasts from the National Transport Model are published annually by DfT. Tables of figures are provided on vehicle delay and traffic speeds by region, area type, road type and vehicle type for 2003, 2010, 2015 and 2025. Traffic and emissions data are also provided. <http://www.dft.gov.uk/pgr/economics/ntm/roadtransportforecasts08/>
63. **Annex 14** contains national maps of estimated average vehicle delay (seconds per vehicle kilometre) for 2003 and forecast delay in 2025 using modelled data from the DfT's National Transport Model. Maps A14.1 and A14.2 show delay on the road network for motorways and A roads. Maps A14.3 and A14.4 show estimate average delay on all roads for unitary and county authority areas. More details of the NTM forecast are set out in *Road Transport Forecasts 2008* at <http://www.dft.gov.uk/pgr/economics/ntm/roadtransportforecasts08/>.
64. The Highways Agency produces Regional Network Reports for each of England's nine GOR's. Each report is a summary of regional characteristics and the current and future predicted performance of the strategic road network. They also contain background information about relevant planning and other considerations. They provide operational strategic road network information to help planning bodies consider transport priorities in their region.
65. In some ways rail overcrowding can be seen as equivalent to average vehicle delay on the road - they can both indicate where demand is exceeding supply. **Annex 15** shows a national map of crowding on most of the network in 2006/7 and provides a forecast of crowding in 2013/14 based on demand forecasts and the expected capacity of the rail network including currently announced rail schemes including delivery of the Governments HLOS (High Level Output Specification). These are consistent with the analysis used to underpin the Departments 2007 White Paper, *Delivering a Sustainable Railway*.
66. Rail reliability is generally measured through the industries Public Performance Measure (PPM). PPM is the percentage of

franchised passenger trains arriving at their destination and within a specified lateness margin (typically five or ten minutes). This measure captures all delay causes (Network Rail, train operators (TOCs) and others). The Office of the Rail Regulator publish PPM results for each train operating company in their *National Rail Trends* publication which can be found at <http://www.rail-reg.gov.uk/server/show/nav.1863>.

67. Network Rail is developing Route Utilisation Strategies (RUSs) to cover the rail network, in conjunction with rail industry partners and wider stakeholders. RUSs seek to balance capacity, passenger & freight demand, operational performance and cost, to address the requirements of funders and stakeholders. Network Rail will take account of the recommendations from RUSs when carrying out its activities. In particular they will be used to help inform the allocation of capacity on the network through application of the normal Network Code processes. They can be found at <http://www.networkrail.co.uk/asp/4449.aspx>.

1.6 Resilience

68. It is important to consider the challenge of ensuring transport networks are resistant and adaptable to shocks and impacts such as adverse weather, accidents, terrorist attacks and impacts of climate changes.
69. The Climate Change Act requires Government to take account of adapting the UK's infrastructure to be resilient to the impacts of climate change. Regional and local transport authorities will also have to take action to assess and address climate change impacts.
70. The UK Climate Impacts Programme (UKCIP) helps organisations to adapt to inevitable climate change. While it is essential to reduce future greenhouse gas emissions, the effects of past emissions will continue to be felt for decades. So, it is also essential to adapt by building resilience to the potential impacts of a changing climate. In 1998 and 2002 UKCIP published scenarios of projected climate change for the UK. These are due to be updated this year providing scientific data on climates we can expect in future. Since 1997 UKCIP has been working with the public, private and voluntary sectors to assess how such changes in our climate will affect various sectors across the UK economy. UKCIP has developed a website (<http://www.ukcip.org.uk/>) that can help organisations understand climate change and how these changes might affect them. UKCIP provides tools and services to help in planning to adapt so organisations can prepare for negative impacts and take advantage of any positive ones. The website also includes examples of what people have already done to adapt and links to information and advice in different sectors.

1.7 National Networks

71. The DfT will lead for challenges on the 14 strategic national corridors. It will identify hotspots, where key transport challenges are likely to be greatest, before initiating a limited number of studies to be taken forward for these areas. The Department will engage with national and regional partners on the location and scope of these studies and will consider regional proposals for making some of them joint studies. The studies will then start generating and examining options, which will ultimately be sifted into packages. *DaSTS Annex 1* provides a case study of the transport challenges on the London to Manchester.

1.8 International Networks

72. For international networks, the Department has identified the ten ports and seven airports through which most people and goods enter and leave our country, which together make up our key international gateways (set out in the tables below). The intention is to carry out a series of gateway and freight studies focused on these gateways to generate future policy options. For aviation, future studies will be targeted at key airports amongst the seven key international gateways where the challenge is greatest. For maritime and freight, studies are likely to focus on the transport of commodities.

English ports ranked by traffic in million tonnes, 2007

	Traffic (thousand tonnes)
Grimsby and Immingham	66,279
London	52,739
Tees and Hartlepool	49,779
Southampton	43,815
Liverpool	32,258
Felixstowe & Harwich	29,470
Dover	25,144
Hull (including rivers Hull and Humber)	21,867
Medway	15,417
Bristol	11,178
Total traffic, England ports	399,085

Source: DfT Maritime Statistics, figures include domestic as well as international traffic

English airports ranked by passenger movements and freight tonnage, 2007

	Passengers (millions)	Freight (thousand tonnes)
Heathrow	67.9	1,311
Gatwick	35.2	171
Stansted	23.8	204
Manchester	21.9	165
Luton	9.9	38
Birmingham	9.1	14
East Midlands	5.4	275
Total (UK)	216.4	2,273

Source: CAA, 2007

73. The Department, working with key industry stakeholders, has developed a suite of analyses that looks at the end-to-end journey and passenger/user experience through major UK international gateways. These enable us to better understand the pinch points for passenger and goods movements in and out of the UK such as road and rail access to ports and airports. We have completed these analyses for Heathrow, Manchester, Luton and Stansted (with an analysis of Gatwick airport due for publication early this year), and for Container Freight and Roll-on roll-off freight (and an air freight analysis is due for publication early this year). They can be found at www.dft.gov.uk/about/strategy/transportstrategy/tasts/userexperience.
74. Information on the amount and type of traffic in and out of UK ports is published in the DfT's Maritime Statistics report at <http://www.dft.gov.uk/pgr/statistics/datatablespublications/maritime/compendium/maritimestatistics2007>
75. The CAA publish data on numbers of flights, passengers, and freight cargo travelling from all UK airports, see Tables 12.1 and 12.2 at <http://www.caa.co.uk/default.aspx?catid=80&pagetype=88&sglid=3&fld=2007Annual>.
76. The CAA also publish results from their passenger survey which provides information, by airport, on the origin and destination of passengers, trip purpose and mode of the main non-air leg of the passengers journey. Additional questionnaire modules include information on the passenger experience and satisfaction with service at the airport. Results can be found at <http://www.caa.co.uk/default.aspx?catid=81&pagetype=90&pageid=7640>
77. By way of example **Annex 16** provides two examples of analysis of travel patterns to international ports and airports. Map A16.1 shows HGV flows from key international ports. Map A16.2 shows the top 10 origins and destinations for passengers travelling to and from Manchester Airport by road. Regions might consider travel demand on networks to ports and

airports (especially those not already covered by the DfT as a key international gateway).

1.9 The Logistics Perspective

78. In December 2008 the Department published a document called *Delivering a Sustainable Transport System: The Logistics Perspective*, a companion to the main *DaSTS* report. It can be found at <http://www.dft.gov.uk/pgr/freight/dastslogisticsperspective.pdf>.
79. *The Logistics Perspective* identifies sixteen issues of concern and relevance to the freight and logistics industry which the Department will address when generating and examining policy options for the 2014 – 2019 period across the national and international network; and which the regions and local authorities will want to consider when developing options and priorities for their networks.
80. To ensure the Department can effectively identify options to address these future issues, we are continuing to develop our freight evidence base. This includes collection of statistical data and forecasting work enabling us to identify freight hotspots on the network, and completion of a series of end to end case studies. The end to end case studies are designed to look at the whole journey of a freight commodity from its origin to its final destination and bring out the full complexity, interaction and diversity of the transport chain. *The Logistics Perspective* end to end case studies complement the international gateway end to end journey studies and can be found at <http://www.dft.gov.uk/about/strategy/transportstrategy/tasts/userexperience/>.
81. The Department is planning to undertake detailed analysis of HGV movements on the strategic national corridors. This will provide information on commodities, origins and destinations and also major movements onto and off of the strategic national corridors. This work will be similar to the case study of the corridor between Rugby and Manchester published in Annex B of *The Logistics Perspective*. Results from this analysis are likely to become available in Spring 2009.
82. The Department's port traffic forecasts, published July 2007, showed that overall demand between now and 2030 is expected to grow by around 1% per annum in tonnage terms. Within this figure there are very significant commodity variations, with some sectors — notably containers, ro-ro and liquefied natural gas — growing much faster. At times of high demand, such as the autumn peak period, congestion at some container ports would, if capacity shortages were not addressed, delay the supply of containers to customers significantly. Recently approved expansions, as at Felixstowe/Harwich, London Gateway and Mersey, should help to ease these constraints to around 2020 — but our long-term forecasts suggest that further capacity will be needed beyond that time. These forecasts are subject to many uncertainties, for example, growth in container imports depend on the recovery in domestic consumer demand growth from the current recession and globalization of manufacturing, while bulk fuel imports

depend on the future direction of energy policy. But overall we believe that they provide reasonable order of magnitude indications of likely growth for the main sectors, and hence of how far demand for ports traffic is likely to exceed available capacity once long-term economic growth recovers. The Department's port traffic demand forecasts can be found at <http://www.dft.gov.uk/pgr/shippingports/ports/portspolicyreview/>.

83. For a comprehensive guide to the road freight statistics and surveys produced by the DfT see <http://www.dft.gov.uk/pgr/statistics/datatablespublications/freight/sourcesofroadfreightinfo.pdf> and <http://www.dft.gov.uk/pgr/statistics/datatablespublications/freight/roadfreightfaq.pdf>.
84. *National Rail Trends*, published by the Office of Rail Regulation, includes quarterly summary statistics on rail freight tonne kilometres and tonnes lifted. Network Rail's ACTRAFF database contains information relating to rail freight traffic at over 1000 recording points on the network. *National Rail Trends* can be found at <http://www.rail-reg.gov.uk/server/show/nav.1863>.
85. Network Rail publish a *Freight Route Utilisation Strategy*, which among other things contains rail freight demand forecasts, this can be found at <http://www.networkrail.co.uk/browseDirectory.aspx?dir=%5CRUS%20Documents%5CRoute%20Utilisation%20Strategies%5CFreight&pageid=2895>.

Chapter 2 Tackling Climate Change

86. The Government has committed to a reduction of at least 80 per cent in greenhouse gas emissions by 2050 compared to 1990 levels and is also committed to demanding overall targets for 2020. In this context, the pressing need to reduce transport's greenhouse gas emissions (primarily carbon dioxide), is clear.
87. One of the Department's five main goals for transport is to "reduce transport's emissions of carbon dioxide and other greenhouse gases, with the desired outcome of tackling climate change".
88. Adapting to the impacts of climate change is covered in section 1.6.

2.1 Local

89. The Local Transport Act 2008 includes a duty for local transport authorities to have regard to Government policies and guidance on climate change mitigation and adaptation when they create and implement their transport strategies.
90. In December, the Department also released draft guidance for consultation to assist local transport authorities in preparing their next Local Transport Plans. The guidance encourages local authorities to develop strategies and implementation plans for transport that take significant steps towards mitigating climate change by encouraging the development of sustainable transport systems, facilitating behaviour change and reducing the need to travel.
91. 100 out of 150 local authorities have selected National Indicator 186 – measuring the per capita reduction in CO₂ emissions in the relevant area – as a priority in their Local Area Agreement with Government. All 150 authorities in England will monitor progress against this indicator and this will be considered in the Audit Commission's Comprehensive Area Assessment reports in November 2009. Information on the data used for this indicator is at paragraph 79.

2.2 Regional

92. Regions are being asked to consider climate change in their work on both regional funding advice (RFA) and also in relation to *DaSTS*.
93. Regions are currently developing their regional funding advice, to be submitted at the end of February 2009. In providing this advice, RFA guidance emphasised the need for regions to consider and estimate the effects on carbon dioxide emissions of their proposals. DfT will need to reflect on the aggregate emissions impacts of national and regional

proposals in the light of both the forthcoming carbon budgets set under the terms of the Climate Change Act and the EU Climate and Energy Package.

94. Within DaSTS, regions will be in the lead for generating options for post-2014 transport investment on the city and regional network. It will be important for regions to consider the impacts of their proposals on greenhouse gas emissions and to seek to reduce (and minimise) such emissions in overall packages of options.

2.3 Carbon data and analysis

95. The Climate Change Act requires Government to take account of adapting the UK's infrastructure to be resilient to the impacts of climate change. The UK Climate Impacts Programme (UKCIP) is to launch its climate projections in April which will be an important source of data for everyone when considering how they might be impacted by climate change.
96. Data measuring CO₂ emissions per capita for every Local Authority and GOR for 2006, as used for National Indicator 186, are available at <http://www.defra.gov.uk/environment/localgovindicators/ni186.htm>.
97. The indicator uses centrally produced statistics to measure end user⁷ CO₂ emissions in the local area from:
 - Business and public sector (industrial and commercial);
 - Domestic housing; and,
 - Road transport (excluding emissions from motorways)
98. **Annex 17** contains one national map and nine regional maps showing CO₂ emissions from road transport per capita by Local Authority in England using the road transport data which supports National Indicator 186 for 2006. The data was produced by AEA for DEFRA, it is on an end user basis and excludes emissions from motorways.
99. **Annex 18** contains one national map and nine regional maps showing CO₂ emissions on the road network (per kilometre of road) for 2006. The maps cover motorways and A-roads and are based on data provided by AEA to DfT. Emissions have been calculated at traffic census points and are on a by source basis⁷.
100. DEFRA publish statistics on UK greenhouse gases as National Statistics at <http://www.defra.gov.uk/environment/statistics/globalatmos/index.htm>.
101. Geographically detailed statistics are published in the UK National Atmospheric Emissions Inventory (NAEI) maintained by AEA on behalf of DEFRA and the Devolved Administrations at <http://www.naei.org.uk/>. NAEI includes data and maps of CO₂ and other pollutants from transport and

⁷ Carbon dioxide from transport can be calculated by source - an estimate of emissions from the vehicle itself; or on an end user basis - which includes a share of emissions from combustion of fossil fuels at power stations and other fuel processing industries.

other sources where emissions are allocated to areas one square kilometre in size, see http://www.naei.org.uk/mapping/mapping_2006.php. A report on the methodology underpinning the data and the maps is at http://www.airquality.co.uk/archive/reports/cat07/0812151643_NAEIMappingMethodReport2006.pdf.

102. **Annex 19** contains two examples of maps using the NAEI data. Map A19.1 shows domestic transport CO₂ emissions across the UK in 2005. Map A19.2 shows domestic transport CO₂ emissions in London in 2005, by way of example of how relatively local maps can be produced from the data on NAEI.
103. In 2008 the DfT published *Carbon Pathways Analysis* which examines emissions by mode, journey purpose and journey length by using data from the National Travel Survey (NTS). This is intended to inform option generation – to aid consideration of where it may be most cost-effective to focus policies to reduce emissions from the transport sector. The Carbon Pathways Analysis report is at <http://www.dft.gov.uk/about/strategy/transportstrategy/tasts/tastscarbonpathway/>.
104. The *Carbon Pathways Analysis* showed that the distribution of car trips and CO₂ emissions is very different. Although short car journey's account for a high proportion of all car trips, they account for a much smaller proportion of CO₂ emissions. The analysis also showed that the distribution of distance travelled as a car driver is similar to the distribution of CO₂ emissions from car driver trips. Therefore, average distance travelled as a car driver can be used to give an indication of CO₂ emissions for different types of trips. The main difference is that short car driver trips account for a slightly higher proportion of CO₂ emissions than distance travelled and, conversely, long car driver trips account for a lower proportion of CO₂ emissions than distance.
105. **Annex 20** provides regional analysis of car travel by journey purpose and journey length, using data from the National Travel Survey (NTS). Because average distance travelled as a car driver can be used to approximate the distribution of CO₂ emissions, this data can be used to aid consideration of where it may be most cost-effective to focus policies to reduce car emissions on a regional basis (the same that the *Carbon Pathways Analysis* does at a national level).
106. The *Carbon Pathways Analysis* also contains a forecast for all UK domestic CO₂ transport emissions. More recently, the Department published National Transport Model (NTM) forecasts including road transport emissions by region, area type, road type and vehicle type to 2025. These can be found at <http://www.dft.gov.uk/pgr/economics/ntm/roadtransportforecasts08/>. Further updates will be provided as policies and proposals to meet future carbon budgets are developed.

Chapter 3 Contribute to better safety, security and health

3.1 Safety

107. The DfT's health and safety goal is “to contribute to better health and longer life-expectancy through reducing the risk of death, injury or illness arising from transport, and promoting travel modes that are beneficial to health”.
108. We want to ensure that, alongside the other DfT goals, health and safety considerations are given proper weight at all levels and in all areas of transport decision-making. And in turn, transport safety decisions need to take account of economic, environmental and social impacts, and explicitly to support delivery of the Department's wider objectives.
109. Transport is an important factor in public health and safety. Access to transport can be positively health promoting – giving access to employment, education and services, and offering opportunities for exercise and recreation. But transport can also be health damaging, not just directly through accidents, but by generating pollution, noise, stress and community severance. The decline in levels of physically active transport modes (walking and cycling) has been part of a wider pattern of reduced physical activity, and less healthy lifestyles. We want to encourage the use of more active transport modes whilst continuing to make them safer.

3.2 Road safety good practice

110. There are many examples of good practice in road safety work in England, including six beacon councils (Devon, Knowsley, Lincolnshire, Norfolk, Northamptonshire and Nottingham). They have sponsored the development of the Timebank website <http://www.roadsafetyhub.co.uk/> , which is to be transferred to the Local Authority road safety officers association (LARSOA).
111. Good practice in terms of local road safety strategies involves:
 - Local Authority ownership of local road safety strategies, in tandem with delivery through multi-agency partnerships;
 - A strong local policy and programme focus on road casualty reduction, particularly deaths and serious injuries;
 - Strong connections with issues wider than transport (for example childrens' services) and integration into local transport plans;
 - Considering the roles of education, enforcement and engineering alongside each other and in combination;
 - Good use of data, monitoring and evaluation;
 - Co-ordination of the contributions of different local agencies.
112. An extensive list of references related to good practice, including safety, is at:
<http://www.dft.gov.uk/consultations/open/draftguidancelp/policiesbestpractic ehandbook.pdf>

3.3 Transport safety data

113. National statistics for transport accidents and casualties for all modes for 2008 are available from the Department for Transport website at <http://www.dft.gov.uk/pgr/statistics/datatablespublications/accidents/>.

3.3.1 Road Safety

114. Chapter 6 of Regional Transport Statistics 2008 contains regional level road safety statistics. Comprehensive information on road safety statistics and trends is available from “Road Casualties Great Britain 2008”, also on the Department’s website:

<http://www.dft.gov.uk/pgr/statistics/datatablespublications/accidents/casualtiesgbar/roadcasualtiesgreatbritain20071>

115. Although they are a minority of all road casualties, deaths and serious injuries contribute towards about three quarters of the value of the losses associated with road casualties in Great Britain.
116. **Annex 21** contains regional maps for each English GOR which compares the average annual number of killed and seriously injured casualties in each Local Authority area between 2005 to 2007 with the 2001 to 2004 period, whose use as a baseline the Department encouraged for second local transport plans.
117. **Annex 22** contains regional maps of the primary route road network (motorways, other trunk roads and those other main roads of more than local importance) identifying the rate of killed and seriously injured casualties and classifying each stretch into one of five bands. These maps are produced by the European Road Assessment Programme (EuroRAP). The DfT has provided funding to extend this mapping to other A-roads.
118. The stretches of route mapped into the medium-high or high bands present road users with a disproportionate risk compared to the main road network as a whole.
119. In addition EuroRAP produces risk rating maps of major routes, related to the standards of the engineering provision on them. These may be helpful in conjunction with the maps of the rates of deaths and serious injuries on routes in identifying priorities for doing further work.
120. We consider there is a valuable role, additional to that of smaller local schemes, for engineering projects costing between £0.5m and £5m, including on principal roads in rural areas, to make key junctions safer and on major urban arteries (such as mixed priority routes). These projects need careful appraisal so all their major impacts are considered. It is important that the role of enforcement, smaller scale engineering measures and education instead or in conjunction with these larger engineering solutions

are considered before decisions to proceed are made. It may be worthwhile to specifically identify the projects and the issues they are addressing specifically in regional strategies or funding advice.

3.3.2 Rail Safety

121. Information on rail safety and accident investigation is available from the Rail Safety and Standards Board, the Rail Accident Investigation Branch and the Office of Rail Regulation:

<http://www.rssb.co.uk/>

<http://www.raib.gov.uk/home/index.cfm>

<http://www.rail-reg.gov.uk/server/show/nav.001014001008>.

3.3.3 Aviation

122. Information on aviation accidents and investigations is available from the Civil Aviation Authority and from the Air Accident Investigation Branch at

<http://www.aaib.gov.uk/home/index.cfm> and <http://www.caa.co.uk/>.

3.3.4 Maritime

123. Information on marine safety and accident investigation is available from the Marine Accident Investigation Branch and the Maritime and Coastguard Agency:

<http://www.maib.gov.uk/home/index.cfm>

<http://www.mcga.gov.uk/c4mca/mcga07-home>

3.4 Health

124. The National Obesity Observatory e-Atlas is an interactive mapping tool for the analysis of data on the prevalence of obesity and its determinants for local authorities in England. The e-Atlas enables users to compare a range of indicators including prevalence of childhood obesity using data from the National Child Measurement Programme (NCMP) with, for example, local area deprivation scores and rates of physical activity. See

<http://www.noo.org.uk/maps>

125. The Association of Public Health Observatories provide Health Profiles - a snapshot of health for each local council in England using key health indicators, which enables comparison locally, regionally and over time. They are designed to decide where to target resources to tackle health inequalities at a local level and can be found at

http://www.apho.org.uk/default.aspx?QN=P_HEALTH_PROFILES.

3.5 Air Quality

126. The UK, along with all EU Member States, has a binding commitment to meet stringent European air quality targets. The UK also has national targets, which closely mirror the European ones. These are monitored via a national air quality indicator which DfT shares with DEFRA as part of the Natural Environment PSA (PSA28). The UK is currently meeting its Air Quality Strategy targets for six of eight pollutants. However, we are still in exceedence for the two key pollutants, particulate matter (PM₁₀) and nitrogen dioxide (NO₂). This is true of most other Member States.
127. A new air quality directive came into force in June 2008 which provides the possibility of time extensions to meet PM₁₀ and NO₂ limit values, to 2011 and 2015 respectively. To obtain these compliance flexibilities, the Government needs to demonstrate how the UK will meet EU limit values by the new deadline. In January 2009, the Government consulted publicly on its plans to apply for compliance flexibility for PM₁₀.
128. Local Authorities (LAs), along with the devolved administrations, fully recognise the important role they have to play in delivering the objectives of the Air Quality Strategy. The Environment Act (1995) and the Environment (Northern Ireland) Order 2002 introduced the system of local air quality management (LAQM). Since then, LAs have had to periodically assess and review air quality in their areas. Where any objective is unlikely to be met by the relevant deadline, LAs must designate those areas as Air Quality Management Areas (AQMAs) and must draw up action plans and act accordingly. Details of AQMAs, including maps of exceedences and copies of air quality action plans in the UK, can be found at the National Air Quality Archive: <http://www.airquality.co.uk/>.
129. Whilst this system has greatly improved our understanding of local air quality in the UK over recent years, closer collaboration with Local Authorities on a range of measures is necessary to meet both EU and UK limit values for key pollutants. Transport is a key factor in many AQMAs and Local Authorities have been encouraged to integrate their air quality action plans into their Local Transport Plan (LTP). This should increase the capacity to deliver cleaner air by tackling the local road sources of pollutant emissions.
130. Examples of good practice can be found on the National Air Quality Archive. Several Local Authorities, including the London Borough of Camden, Falkirk and Belfast have produced coherent and detailed action plans which show a firm understanding of the specific causes of exceedences in their areas and commitment to measures which would improve this.
131. In addition, several LAs have been awarded Beacon status for their commitment to Air Quality as laid out in the 'Delivering Cleaner Air' beacon theme – further details at <http://beacons.idea.gov.uk/idk/core/page.do?pageId=6074405>. The Beacon councils (Sheffield, Croydon, Sefton and Greenwich) have compiled case

studies detailing their excellent work towards providing cleaner air for their areas: <http://beacons.idea.gov.uk/idk/core/page.do?pagelid=6074407>.

132. Geographically detailed statistics on emissions are published in the UK National Atmospheric Emissions Inventory (NAEI) maintained by AEA on behalf of DEFRA and the Devolved Administrations at <http://www.naei.org.uk/>. NAEI includes data and maps from 25 pollutants including particulate matters (PM₁₀) and nitrogen oxides (NO_x) as nitrogen dioxide (NO₂), key transport pollutants. For maps see http://www.naei.org.uk/mapping/mapping_2006.php.
133. **Annex 23** contains two examples of maps using the NAEI data. Map A23.1 shows emissions of NO₂ in 2006. Map A23.2 shows emissions of particulate matters (PM₁₀) in 2006.
134. The air quality archive has details on AQMAs at <http://www.airquality.co.uk/archive/laqm/laqm.php>, while the following link takes you to a full list of all 232 local authorities that have currently declared an AQMA: <http://www.airquality.co.uk/archive/laqm/list.php>.

3.6 Crime

135. A variety of good practice guidance and research findings on how to improve pedestrian and public transport passengers' personal security can be found on at <http://www.dft.gov.uk/pgr/crime/>. This includes guidance on the Secure Stations Scheme; guidance for Crime and Disorder Reduction Partnerships; and the results of national surveys on passenger perceptions. For example, *Crime and Disorder on Public Transport* can be found at <http://www.dft.gov.uk/pgr/crime/crimedisorderpublictransport?page=3#a1004>
136. Regional information on crime on the railways is available from the British Transport Police from http://www.btp.police.uk/pdf/FOI_publications_Statistical%20Bulletin_2007-2008.pdf. The BTP's latest performance statistics are available in: http://www.btp.police.uk/docs/Aboutus_Performance_FMI%20October%2008.xls
137. The British Crime Survey (BCS), carried out for the Home Office, measures the amount of crime in England and Wales by asking people about crimes they have experienced in the last year. The BCS includes crimes which are not reported to the police. The Home Office publish a quarterly comparison between Police reported crime and the BCS called Crime in England and Wales. The most recent of these, published on 20 January 2009 is at <http://www.homeoffice.gov.uk/rds/pdfs09/hosb0109.pdf>

Chapter 4 Promote equality of opportunity

138. The DfT's goal is to promote great equality of opportunity, "to enhance social inclusion and the regeneration of deprived or remote areas by enabling disadvantaged people to connect with employment opportunities, key local services, social networks and goods through improving accessibility, availability, affordability and acceptability". The DfT also has a goal to contribute to the reduction in the gap between economic growth rates for different regions.
139. The following were identified in the DfT 2007 publication *Evidence base review on mobility: Choices and barriers for different social groups* as groups of potentially disadvantaged people in terms of accessibility issues http://www.dft.gov.uk/pgr/scienceresearch/social/evidence_base_review_on_mobility:
- **Low-income** - Low travel horizons, fear of crime on public transport, some require help with travel costs to work to support job retention and address in-work poverty.
 - **Job-seekers** - Require support with job search activities and to prevent transport being a barrier to employment.
 - **Some low-income parents** - Access to social and cultural networks, healthcare and healthy food shops for parents and families at risk of social exclusion.
 - **Low-income rural households** - Transport-related exclusion in rural areas regarding access to employment, healthcare, healthy food shops, education and social and cultural networks.
 - **Disabled working-age adults** - Transport-related exclusion for disabled adults; current multiple forms of transport assistance; to give additional help to job search activities for disabled people.
 - **Disabled children and young people** - Assistance needed for families to avoid transport-related exclusion for disabled children and young people.
 - **Older people with limited mobility** - Appropriate transport for older people with limited mobility and at risk of social exclusion.
 - **Black and minority ethnic groups** - Some groups more likely to be low-income; socio-cultural barriers sometimes a barrier to travelling and using public transport. Some groups likely to be fearful of using public transport because of personal security issues.
140. However, not all these groups are equally disadvantaged, some may not be disadvantaged. We also have evidence suggesting that the combination of living in a rural area, being on a low income, and having a disability are key factors in accessibility problems.
141. Local Authorities are required to develop accessibility strategies, and to aid those strategies DfT publishes core accessibility indicators. These are journey-time based indicators, and as such do not provide a complete picture of accessibility. But, they do provide helpful information on access to

key local services (schools, GP's, hospitals) and also to supermarkets and employment.

142. The indicators calculate the time taken to reach these destinations using public transport both for the general population and for social groups at risk of exclusion such as children in receipt of free school meals and adults in receipt of Jobseekers Allowance. The core accessibility indicators data are available from:
<http://www.dft.gov.uk/pgr/statistics/datatablespublications/ltp/coreaccessindicators2007>.
143. Work is underway in the DfT to assess how to better incorporate social and distributional impacts (SDIs) into transport appraisal. In the first instance, eight potential impacts have been identified (noise, air quality, accessibility, severance, affordability, distribution of user benefits, personal security, and safety). The feasibility of measuring these impacts across different social groups, and proposals for incorporating them into the appraisal process, are currently being tested using existing data sources (e.g. Census, LFS, IMD, etc). The final report will provide full details of these data sources and where they can be found. This stage of work is due to be completed in the autumn. In the longer-term we will need to consider more how complex SDIs could be better reflected in the equality of opportunity and quality of life goals.
144. A variety of data can help identify how people in different circumstances and in places may experience inequalities to opportunities, services and transport. For example, the Index of Multiple Deprivation (IMD) brings together 37 different indicators which cover specific aspects or dimensions of deprivation: Income, Employment, Health and Disability, Education, Skills and Training, Barriers to Housing and Services, Living Environment and Crime. These are weighted and combined to create the overall IMD 2007 at Lower Super Output Area level, of which there are 32,482 in the country. For more information and data see
<http://www.communities.gov.uk/communities/neighbourhoodrenewal/deprivation/deprivation07/>.
145. **Annex 24** contains one national map and 9 regional maps showing the 2007 Index of Multiple Deprivation.

Chapter 5 Improve quality of life and a healthy natural environment

146. Transport can make a strong contribution to the quality of people's lives. It brings great benefits to us all by making it possible to see the world, buy a huge range of goods and services, enjoy leisure activities, spend time with friends and relatives and have access to the natural environment. However, there is sometimes a tension between the benefits that transport users enjoy and the costs that transport can impose – for example on people who live near roads and railways, ports and airports, and on the natural environment, including biodiversity and landscape. A transport strategy predicated on a net adverse impact on the natural environment would be as unsustainable as one that failed to deliver greenhouse gas reductions.
147. DaSTS grouped these challenges under five headings:
- reducing people's exposure to noise;
 - minimising the impacts of transport on the natural environment, heritage and landscape;
 - improving streetscapes and the urban environment;
 - improve people's experience of travel; and
 - creating opportunities for social contact and access to leisure.
148. By its nature data and evidence in this area is likely to be local, although some sources are provided below. It is also worth noting that the DfT provides guidance on taking many of these aspects into account in the appraisal of transport schemes at http://www.dft.gov.uk/webtag/webdocuments/doc_index.htm#03.

5.1 Noise

149. Directive 2002/49/EC - more commonly known as the Environmental Noise Directive (END) - concerns noise from road, rail and air traffic and from industry. It focuses on the impact of such noise on individuals, complementing existing EU legislation which sets standards for noise emissions from specific sources.
150. It is therefore a concern of transport planning and provision to consider and where possible reduce the number of people and dwellings exposed to high levels of noise from road and rail networks consistent with implementation of Action Plans prepared under the Environmental Noise Directive.
151. DERFA produce noise maps to meet the requirements of the Environmental Noise (England) Regulations 2006, they are intended to inform the production of noise action plans for large urban areas, major transport sources, and significant industrial sites in England. They can be found at <http://noisemapping.defra.gov.uk/cara/wps/portal/noise>.

152. **Annex 25** provides two example of DEFRA's noise maps. One represents noise levels from Leeds Bradford Airport (day evening night levels), the other represent noise from major roads in the North West and Midlands.

5.2 Journey Experience

153. One element of the quality of life goal is to improve the journey experience of transport users of urban, regional and local networks. Regional and local parties may have there own information about the local journey experience of transport users on their networks. *Regional Transport Statistics* also contains information on users perceptions of public transport in Chapter 2 at <http://www.dft.gov.uk/pgr/statistics/datatablespublications/regionaldata/rts/regtranstats2008>.
154. Further information on perceptions of public transport can also be obtained from the bus passenger satisfaction survey and mystery traveller survey, from which regional information is published annually. Figures for the financial year 2007/08 at <http://www.dft.gov.uk/pgr/statistics/datatablespublications/public/annualbulletins/publictransportstatsbul08>.