

# **Transport Statistics Bulletin**

## **National Road Maintenance Condition Survey: 2006**

Key Results

## KEY RESULTS FROM THE 2006 NATIONAL ROAD MAINTENANCE CONDITION SURVEY

The report of the 2006 National Road Maintenance Condition Survey (NRMCS) presents information on the condition of roads and footways in England and Wales. Surface condition is measured using a visual survey of defects and machine based surveys of wet road skidding resistance and the English trunk road network. A structural survey uses a machine to measure the deflection of a road under a standard load.

This document presents key results from the report. The full report can be found on the DfT website at :

<http://www.dft.gov.uk/162259/162469/221412/221546/224866/231270/NRMCS2006Complete.pdf>

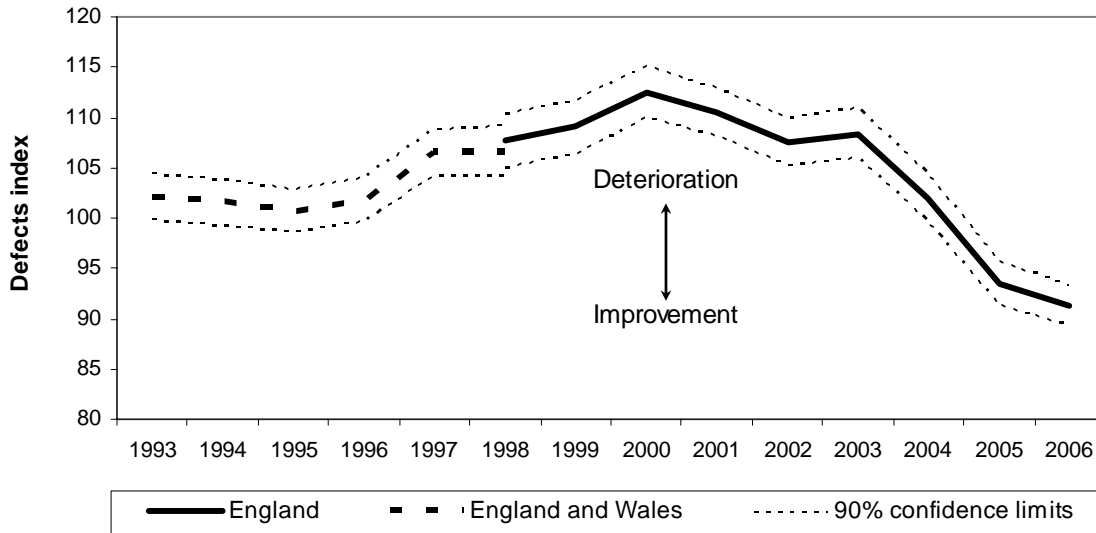
### Visual condition

In July 2000, the Government set out its transport strategy in 'Transport 2010 – The 10 Year Plan'. This included the target to halt the deterioration in the condition of local roads, i.e. non-trunk roads, in England by 2004. This target is monitored by a surface condition 'defects index' which is derived from results of the NRMCS visual survey. The index is set at 100 for the base year 1977, based on conditions in England and Wales. A **significant decrease in the index indicates an improvement in the road condition.**

Figure 1 shows that the average defects index for English local roads has fallen from 112.5 in 2000 to 91.2 in 2006. In order to reflect the uncertainty due to sampling error, ranges are calculated within which the true average defects index lies with a 90 per cent probability. Although a decrease in the index represents improving road conditions, for it to be possible to say with confidence that condition in one year is different from that in another, the confidence limits (as represented by the dotted lines) should not overlap.

Taking into account the confidence limits, statistical analysis shows that local road conditions in England in 2006 show a significant improvement since 2000. That is, the net fall in the index since 2000 is unlikely to be a result of sampling error alone and reflects a real improvement in road conditions. The 90% confidence interval for the change since 2000 is between 18 and 25 points.

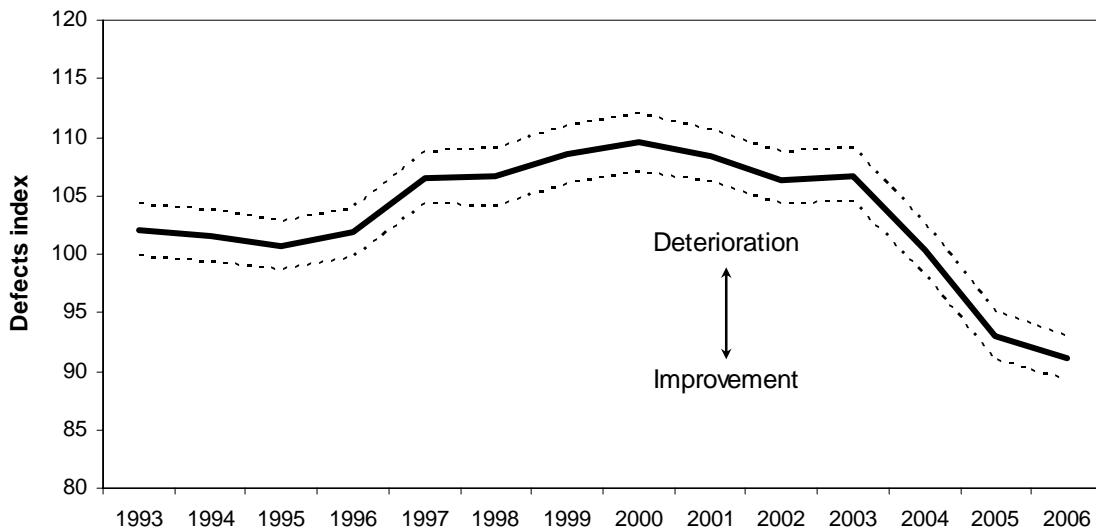
**Figure 1 Defects index, England <sup>1</sup>, 1993 to 2006 - local roads**



1. A defects index for England is not available prior to 1998 so the index for England and Wales is included as an indication of the earlier trend.

The length of local roads in England accounts for 90 per cent of all local roads in England and Wales and so it is not surprising to find that the trend in visual condition in England is similar to that in England and Wales (see Figure 2). However, the trend in Wales is fairly different to that for England; road conditions in Wales have not changed significantly since 2000 (see Table 3.1 in the main report).

**Figure 2 Defects index, England and Wales, 1993 to 2006 - local roads**

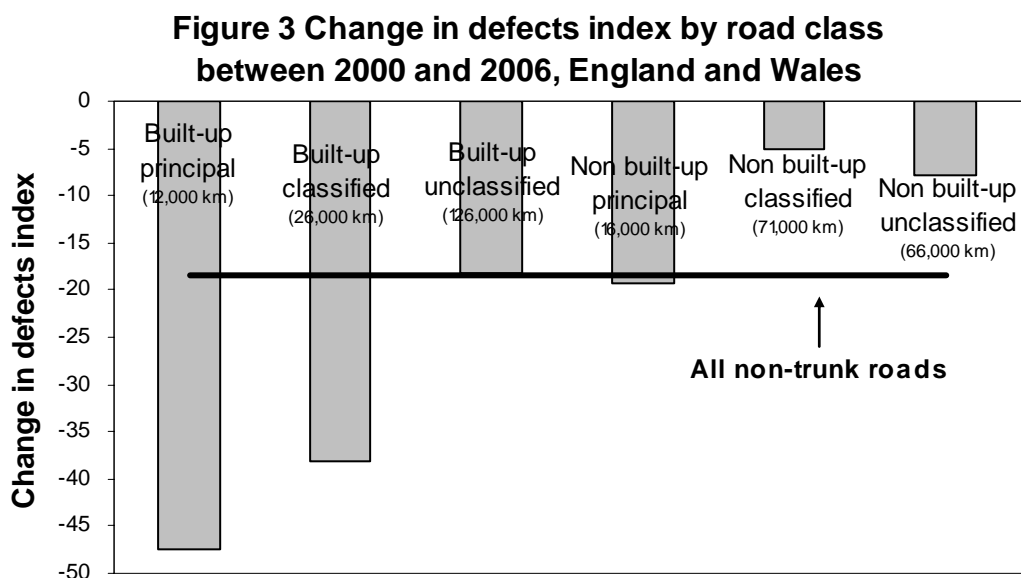


The local roads defects index for England and Wales fell from 109.5 in 2000 to 91.1 in 2006. This fall in the index is statistically significant and has a confidence interval of between 16 and 21 index points.

Changes in conditions vary across the different road types as shown in Figure 3. In recent years, real improvements - as indicated by **significant** falls in the index -

have been seen on all road types expect for non built-up unclassified roads, which tend to be country lanes.

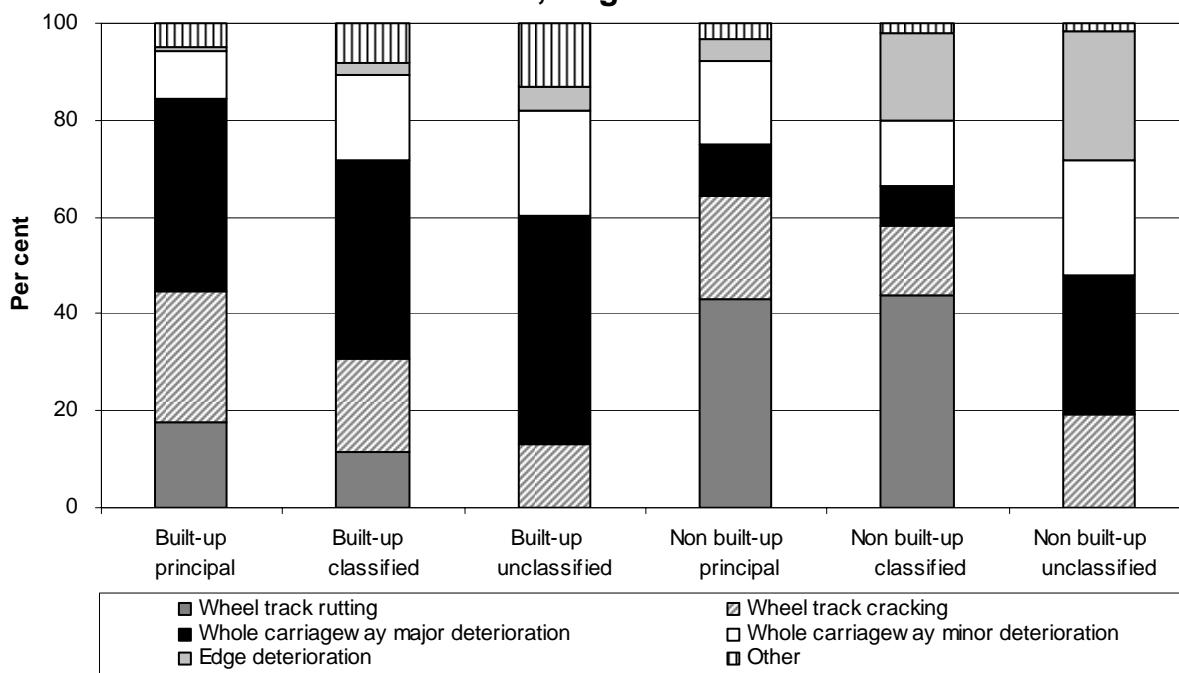
Built-up unclassified roads are generally through residential areas and account for 40 per cent of all local roads. The reduction, of between 13 and 23 points, in the defects index for these roads will have contributed most to the reduction in the overall defects index since 2000.



In 2006, the defects index for non built-up unclassified roads was 118.4, by far the highest of any road class. Having the highest index signifies that conditions on this group of roads have deteriorated more than other groups, relative to their conditions when the survey began in 1977. However, conditions on these roads have improved significantly since 2004, with the index falling by between 9 and 30 points.

Figure 4 shows that around half of the defects index for built-up roads of all types was a result of major deterioration to the whole carriageway, i.e. not just in the wheel tracks. Rutting contributed to over 40 per cent of the index on non built-up principal and classified roads, i.e. non built-up local authority owned A, B and C roads. Major deterioration also has a large effect on non built-up unclassified roads, as does edge deterioration since these tend to be roads without kerbs.

**Figure 4 Percentage contribution of defects <sup>1</sup> to defects index in 2006, England and Wales**



1. In practice, rutting alone would not generally be treated on unclassified roads and so the contribution is assumed to be zero.

### Structural condition

To supplement results on visual road condition, DfT has been producing structural survey indicators, based on data from local engineering surveys. These indicators have been used to report on the proportion of the major road network where structural condition has deteriorated to the point at which close monitoring is needed to see whether maintenance is required.

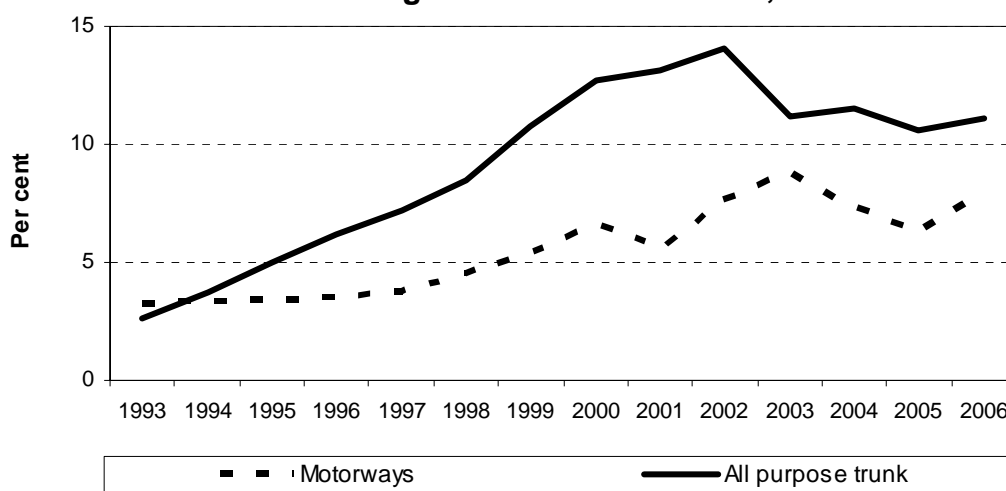
Results for English motorways and all purpose trunk roads have not been available since 2002, following changes in the way the Highways Agency monitors its network. In 2006, due to variations in the supply of data, there have been some difficulties producing results for principal roads in England and Wales. Further work on this is still being carried out and a paper will follow on this during June. Consequently, results are only reported here for Welsh motorways and all purpose trunk roads.

Figure 5 shows the motorway and all purpose trunk road figures for Wales. In 2006, 7.9 per cent of motorways needed close monitoring, a slightly higher level than in 2000.

The National Assembly for Wales has been working to a target that by 2004-05 no more than 13 per cent of the all purpose trunk roads network should need close

monitoring of its structural condition. The 2006 value was 11.1 per cent, which is very similar to the 2000 level.

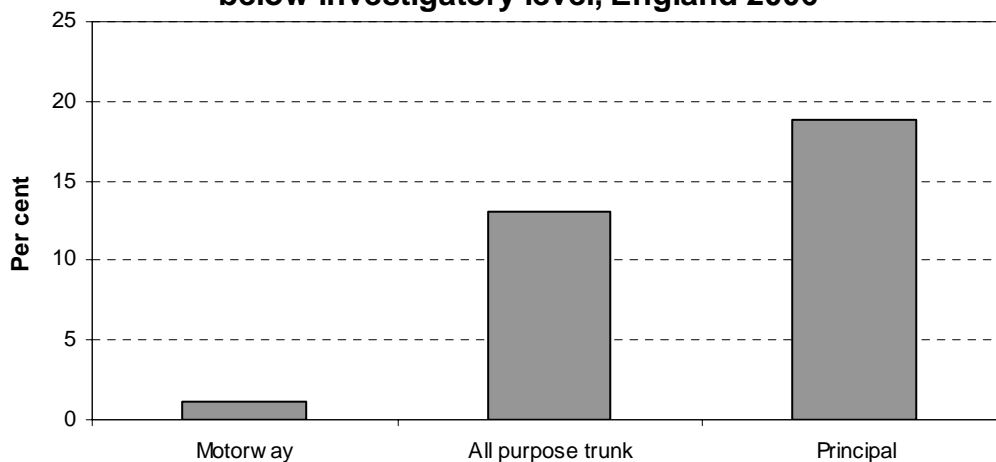
**Figure 5 Percentage of network requiring close monitoring of structural condition, Wales**



### Skidding resistance

Road safety is improved when roads have a satisfactory level of skidding resistance. The skidding resistance of major roads is assessed when the road surface is wet and compared with an investigatory level that is set for the characteristics of the particular length of road. Where the skidding resistance is below the investigatory level, the road is not necessarily unsafe but it does show that further investigation is required. This would include an assessment of the safety record for the length of road to see if maintenance is needed. Latest results for England are shown in Figure 6.

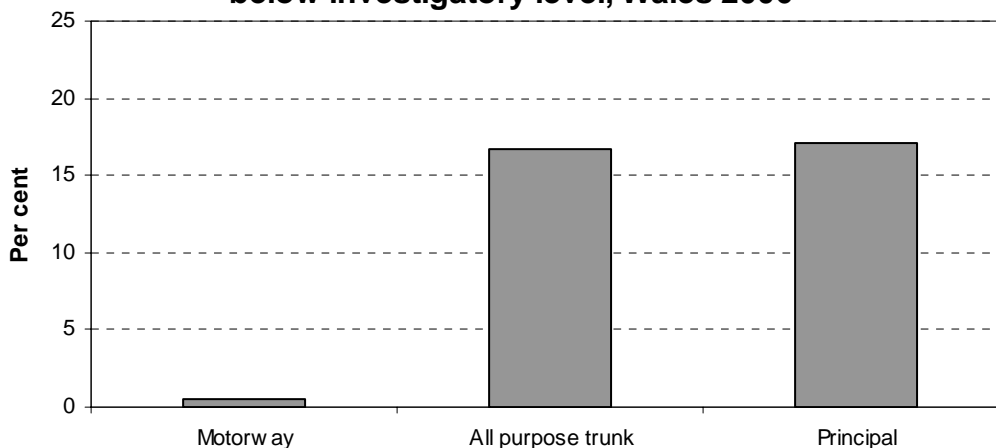
**Figure 6 Skidding resistance, percentage length at or below investigatory level, England 2006<sup>1</sup>**



1. Figures for principal roads relate to the average in 2003 to 2005

The percentage needing further investigation was lowest for motorways and highest for principal roads. In particular, 51 per cent of principal roads in London and 28 per cent in metropolitan authorities needed further investigation to determine if remedial treatment in relation to skidding resistance is required. Figure 7 shows the latest skidding resistance results for Wales.

**Figure 7 Skidding resistance, percentage length at or below investigatory level, Wales 2006 <sup>1</sup>**



1. Figures for principal roads relate to the average in 2003 to 2005

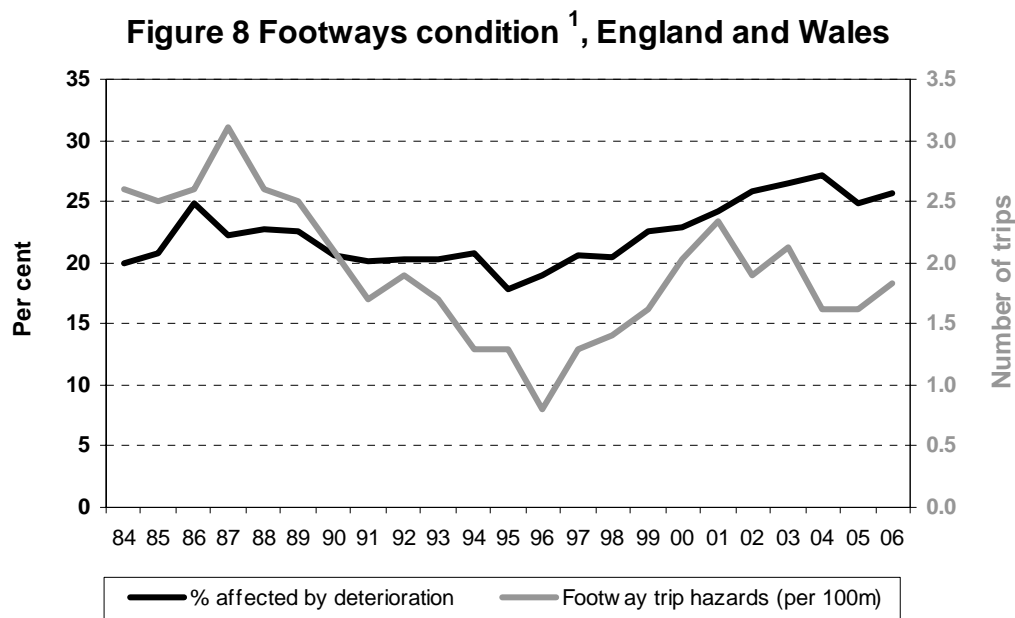
### **Trunk roads in England**

The Highways Agency uses machine based surveys to assess the surface condition of the English trunk road network. Results are derived from comparisons of the severity of each type of defect with thresholds representing levels of condition where treatment may be required. Results represent the percentage of the network where the threshold for at least one aspect of condition has been exceeded. In 2006, 5 per cent of motorways in England needed further investigation to see if maintenance is required, compared with 7 per cent on all purpose trunk roads.

### **Footways, verges and kerbs**

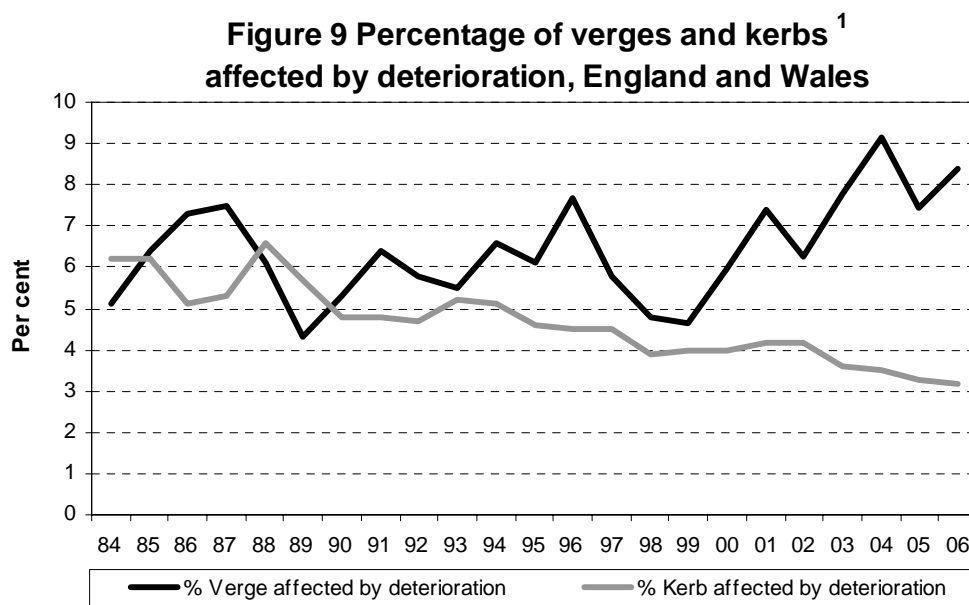
Along with the condition of roads, the NRMCS also collects visual survey information on the condition of footways, verges and kerbs on all local roads and, prior to 2003, on all purpose trunk roads as well. Results are no longer available for all road classes (excluding motorways), but the relatively short length of all purpose trunk roads means their exclusion from the survey makes little difference to the overall total. Comparisons between recent figures for non-trunk roads and historic figures for non-trunk roads and all purpose trunk roads should provide a relatively consistent picture of changes over time.

Figure 8 shows that the percentage length of footways, in England and Wales, affected by deterioration (a combination of various defects on the footway) rose steadily between 1995 and 2004 and has been at around 25 to 26 per cent since then. The steady rise in the number of ‘trip hazards’ (spot conditions per 100 metres posing potential danger to pedestrians) over the latter part of the 1990s has also halted, staying at around 2 trip hazards per 100m or less since 2000.



1. Figures are for local roads from 1999. Prior to that they include all purpose trunk roads although this will have little effect on the overall total.

The percentages of verges and kerbs affected by deterioration are shown in Figure 9. The percentage of **verge area** which is disintegrating or deformed has varied considerably over the years and it is difficult to draw conclusions about current trends. In 2006, the percentage of **kerb lengths** which need replacing or resetting is



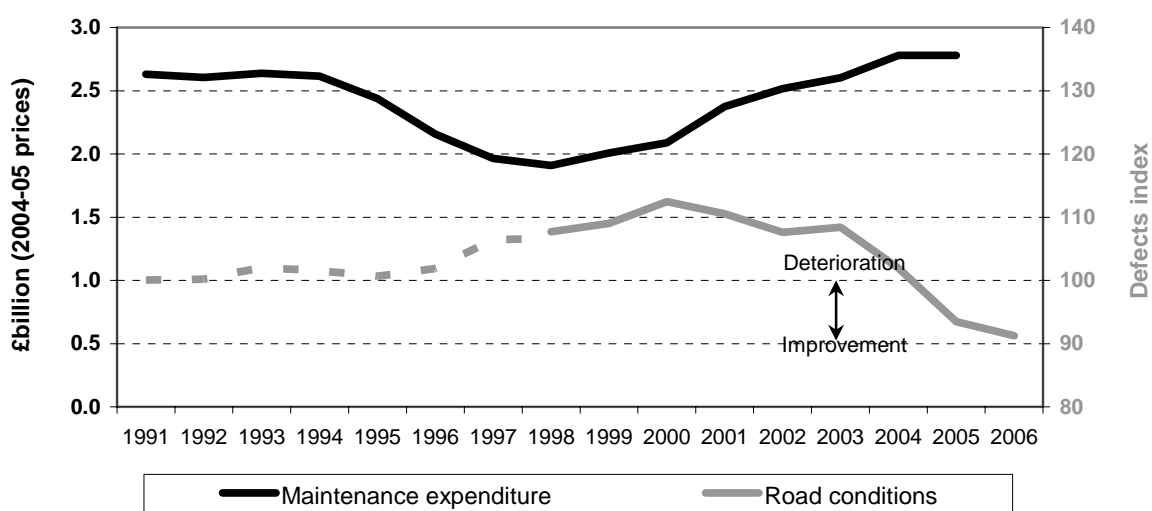
1. Figures are for local roads from 1999. Prior to that they include all purpose trunk roads although this will have little effect on the overall total.

at its lowest level since the survey began.

## Maintenance expenditure

Levels of maintenance expenditure on local roads in England were fairly stable in the early 1990s but were around some 25 per cent lower towards the end of the decade (see Figure 10). During this period, visible conditions on local roads worsened. Since then, funding has increased and this has been followed by the recent overall improvement in conditions. Expenditure did not increase in real terms between 2004-05 and 2005-06, but it should be noted that the adjustment to bring earlier years figures on to 2005-06 prices is based on GDP deflators, rather than engineering specific cost indices, at a time when maintenance costs are rising at rates above more general inflation.

**Figure 10 Maintenance expenditure<sup>1</sup> and surface road conditions<sup>2</sup> on local roads, England<sup>3</sup>**



- 1 Expenditure relates to the financial year. Figures for 2006-07 are not yet available.
- 2 An increase in the index indicates deterioration, a decrease indicates improvement.
- 3 A defects index for England is not available prior to 1998 so the index for England and Wales is included as an indication of the earlier trend.

### A National Statistics publication

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