

# UP TO THE MARK 2002?

THE SUMMARY REPORT OF THE  
2002 RSMA SURVEY OF  
UK ROAD MARKINGS



PUBLISHED BY:  
THE ROAD SAFETY MARKINGS ASSOCIATION,  
BURY BUSINESS CENTRE, KAY ST. BURY, LANCs.  
TEL. 0161 763 7711 FAX 0161 763 7722

## **SECTION 1: INTRODUCTION**

The RSMA 'Up to the Mark 2002?' Ecodyn Survey is the fourth national survey commissioned by the Association since 1996, covering a representative sample of road markings over nearly 1000 km of roads in England & Scotland. Since 2001 the survey is conducted on an annual basis in order to provide a more accurate indication of on going condition of the primary road safety feature on our roads across the country.

The 2001 Survey identified what RSMA felt to be an on going failure of UK road marking infrastructure with the consequent implications for the safety of road users. It further urged the responsible authorities at both national and local level to take urgent action to address the situation through increased investment, the use of more consistent and accurate specifications and maintenance regimes along with the government issuing specific guidance on the use of new road marking standards.

## **SECTION 2: EXECUTIVE SUMMARY – 2002 SURVEY**

The 2002 survey has identified that the quality of the road-marking infrastructure is approaching crisis levels with a continuing decline, reaching the poorest recorded level since the RSMA Survey was started six years ago. The survey identifies that using proposed new Highways Agency (HA) standards some 35% of road markings require immediate replacement. This figure rises to 54% if the figures recommended by the road marking industry as being the safe minimum standard were to be used.

The deterioration in the performance of markings is universal across all road types surveyed, although there is evidence to suggest that performance has improved in sections of motorway maintenance, with half of the motorways surveyed showing some sign of improvement. Notwithstanding this, using the proposed HA recommended standards, 26% of motorway markings require immediate renewal.

Performance in the other categories surveyed and compared year on year present the true extent of the crisis, with 40% of all markings on both dual and single carriageway 'A' roads requiring immediate replacement. (Using industry standards these figures rise to 60%).

Motorways:	26% of markings below proposed national standard intervention level
'A' Roads (Dual Carriageways):	40% of markings below proposed national standard intervention level
'A' Roads (Single Carriageway):	40% of markings below proposed national standard intervention level

The results of the 2002 Survey indicate that the concerns raised in previous survey reports about the medium term performance of the marking infrastructure in the UK have been largely ignored by national and local government and as a consequence the road network has become significantly more dangerous. This is particularly the case in some areas where road-marking performance has been consistently poor and continues to decline.

From a technical perspective the figures suggest that lines below 100mcd/m<sup>2</sup>/lx degrade disproportionately quicker than previously thought. Therefore it is at this 100mcd/m<sup>2</sup>/lx level where highways authorities should plan and implement immediate line replacement.

Overall we believe that the results represent a failure to accord this element of infrastructural road safety the priority that is needed in order to save lives. We believe that same emphasis should be placed on road marking maintenance as is placed on traffic safety camera programmes and that more time, effort and money should be spent overall, by all responsible authorities, on making our road infrastructure inherently safer for the driver.

The RSMA believe that the first steps in achieving this should be through the implementation of the following recommendations:

- The immediate upgrading of road markings nationwide to meet minimum specifiable standards. The Government should through the HA require area management agents, related national authorities and all responsible local authorities to introduce a schedule of programmed road marking performance measurement and maintenance. (Previously proposed in reports in 1999 & 2001).
- This goes beyond the implementation of the proposed maintenance standard TD26 and should require programmed maintenance to be scheduled and undertaken.
- The intervention level of 80mcd/m<sup>2</sup>/lx proposed by the Highways Agency should be revised upwards to 100mcd/m<sup>2</sup>/lx, if the network is to be maintained at a safe level for drivers.
- Action should be taken to ensure Highways Agency and Local Authority specifiers specify road markings to the new European Standards and performance for road users requirements.

### SECTION 3: METHODOLOGY

The survey was undertaken using an Ecodyn machine operated by Prismo Contracting Services Ltd. and commissioned by the Road Safety Markings Association. The equipment operates at 30m geometry in line with the requirements specified in the relevant European Standards operated in the UK

Where reference is made to road markings or markings throughout this report they should be taken to represent the following road markings as measured:

- Motorways: Markings delineating lanes on motorways.
- ‘A’ roads dual carriageways: Markings delineating the two lanes on the dual carriageway.
- ‘A’ roads single carriageway: Markings delineating the two lanes.

The test circuit comprised 979 km of roads (999km in 2001) Of those roads on the test circuit 47.6 km of ‘A’ roads are new to the survey and not included in the comparison but will be utilised in future surveys. 34.6km of ‘B’ roads have been omitted from the analysis as the number of measurable outputs are too few to have statistical integrity.

The 2002 survey results are based on a total of 897 km of roads broken down as follows:

	2001	2002
Motorway:	352.3 km	336.9km
Dual Carriageways:	270.6 km	260.6km
A Roads:	<u>322.2 km</u>	<u>299.5km</u>
Total	945.1 km	897.0km

Due to the change in geometry for retro-reflectivity measurement that accompanied the introduction of European Standards for road markings, the only previous survey that can be accurately compared with the 2002 results is the 2001 Survey. The data for each type of road is therefore presented with the equivalent data from 2001 alongside it.

### SECTION 4: THE 2002 SURVEY RESULTS

The 2002 Survey results are compared with the results obtained over the same circuit of roads in 2001 with an additional analysis being added to that undertaken in 2001, namely the proportion of lines falling below 80mcd/m<sup>2</sup>/lx. This level is that promoted by the Highways Agency as an intervention point for road markings in its draft TD26 Maintenance Document.

CUMULATIVE Type of road	Km surveyed 2001	Km surveyed 2002	%age lines below 100mcd/m <sup>2</sup> lx		%age lines below 150mcd/m <sup>2</sup> lx		%age lines below 80mcd/m <sup>2</sup> lx	
			2001	2002	2001	2002	2001	2002
MOTORWAY	352.3	336.9	39	43	88	69	15	26
DUAL ‘A’ ROADS	270.6	260.6	38	60	78	89	14	40
SINGLE ‘A’ ROADS	<u>322.2</u>	<u>299.5</u>	<u>44</u>	<u>60</u>	<u>88</u>	<u>81</u>	<u>13</u>	<u>40</u>
<b>ALL ROADS</b> (Weighted Average)	<b>945.1</b>	<b>897.0</b>	<b>40</b>	<b>54</b>	<b>85</b>	<b>79</b>	<b>14</b>	<b>35</b>

Figure 4.1

Figure 4.1 identifies the proportion of markings falling below the 80mcd/m<sup>2</sup>lx threshold along with an additional analysis for markings below 100mcd/m<sup>2</sup>lx and 150mcd/m<sup>2</sup>lx for each road category, with the total representing a weighted average of all markings.

The 100mcd/m<sup>2</sup>lx level is that where the industry believes replacement of lines should take place (the Highways Agency proposed investigatory level) whilst the 150mcd/m<sup>2</sup>lx analysis was originally undertaken to estimate potential future performance of markings on roads causing concern and as a marker to provide baseline information for future analysis on specification of performance materials.

The results of the 2002 survey, indicate that there is an increasing problem in respect to the quality of the markings on UK roads and that year on year this problem is getting worse. With the exception of a few individual roads there is no evidence that the urgent maintenance need, identified in the 2001 Survey, for some of the busiest roads in the UK has been addressed.

The already poor condition of the road marking infrastructure can justifiably now be described as being in crisis, with in excess of one third of markings requiring immediate replacement the proposed national standard intervention level, rising to in excess of half of all road markings, if the standard was set at 100mcd/m<sup>2</sup>lx.

The issue in respect to the level where a marking should be replaced i.e. at 80mcd/m<sup>2</sup>lx as suggested by the Highways Agency or at 100mcd/m<sup>2</sup>lx as recommended by the industry, is also re-opened by the results of the 2002 Survey. The results clearly indicate that markings breaching the 100mcd/m<sup>2</sup>lx threshold deteriorate at a faster rate than those above this level and consequently should be subject to prompt replacement once as they fall below

100mcd/m<sup>2</sup>/lx. This can be seen by the acceleration in the proportion of markings now below 80mcd/m<sup>2</sup>/lx against those below 100mcd/m<sup>2</sup>/lx.

Detailed in Figure 4.2 to Figure 4.4 below are the results broken down by road type and by individual road, thereby providing a clear indication as to where the main areas of concern appear to be.

<b>MOTORWAY</b>	<b>Km surveyed</b>	<b>Km surveyed</b>	<b>%age lines below 100mcd/m<sup>2</sup>/lx</b>	<b>%age lines below 100mcd/m<sup>2</sup>/lx</b>	<b>%age lines below 150mcd/m<sup>2</sup>/lx</b>	<b>%age lines below 150mcd/m<sup>2</sup>/lx</b>	<b>%age lines below 80mcd/m<sup>2</sup>/lx</b>	<b>%age lines below 80mcd/m<sup>2</sup>/lx</b>
Road Surveyed	2001	2002	2001	2002	2001	2002	2001	2002
<b>M40</b>	72.0	68.6	55	19	90	40	29	11
<b>M69</b>	25.5	25.4	68	73	100	77	37	58
<b>M62</b>	31.7	30.1	13	38	78	70	3	18
<b>M1</b>	97.4	93.5	52	49	95	79	16	22
<b>M66</b>	16.0	13.7	19	59	93	84	4	35
<b>M6</b>	109.7	105.6	24	20	74	61	3	14
<b>TOTAL / AVERAGE</b>	<b>352.3</b>	<b>336.9</b>	<b>39</b>	<b>43</b>	<b>88</b>	<b>69</b>	<b>15</b>	<b>26</b>

Figure 4.2

The results obtained from the motorway sample clearly illustrate the effect of appropriate maintenance on outputs with the recent works carried out on the M40 providing a significant improvement in all measurement categories. This result is in stark contrast to the M69 where performance continues to deteriorate in the critical 80mcd/m<sup>2</sup>/lx and 100mcd/m<sup>2</sup>/lx categories, only very slightly tempered by improved performance in the 150mcd/m<sup>2</sup>/lx category.

The medium term decline in performance of markings on the M6, M62 and M66 predicted in the 2001 survey has taken place and there is a need for maintenance to be programmed for these roads where it has not already been scheduled. On the M6 this is more likely to be in specific sections rather than across the length of the motorway.

With now over a quarter of motorway markings falling below the immediate replacement threshold set by the Highways Agency, the case for immediate and urgent remedial work is both clear and straightforward.

The results for the Dual Carriageway sample in 2001 raised a general level of concern along with major issues on some significant roads in the Midlands and North West. It is therefore with equal levels of concern and incredulity that we note that the 2002 survey of Dual Carriageways provides the worst results of any road category analysed. Compounding this is the significant on going deterioration of two of the roads that we described as having abysmal performance in 2001, namely the A45 and the A56.

<b>DUAL 'A'</b>	<b>Km surveyed</b>	<b>Km surveyed</b>	<b>%age lines below 100mcd/m<sup>2</sup>/lx</b>	<b>%age lines below 100mcd/m<sup>2</sup>/lx</b>	<b>%age lines below 150mcd/m<sup>2</sup>/lx</b>	<b>%age lines below 150mcd/m<sup>2</sup>/lx</b>	<b>%age lines below 80mcd/m<sup>2</sup>/lx</b>	<b>%age lines below 80mcd/m<sup>2</sup>/lx</b>
Road Surveyed	2001	2002	2001	2002	2001	2002	2001	2002
<b>A45</b>	24.8	23.6	70	96	99	96	30	76
<b>A46</b>	7.2	7.1	58	59	100	92	22	12
<b>A56</b>	13.7	13.4	73	89	99	93	30	70
<b>A66</b>	80.7	77.8	7	46	45	76	3	30
<b>A1</b>	79.4	76.5	22	36	74	79	6	30
<b>A75</b>	34.0	32.8	7	29	37	86	3	11
<b>A303</b>	30.8	29.4	28	67	89	98	5	48
<b>TOTAL / AVERAGE</b>	<b>270.6</b>	<b>260.6</b>	<b>38</b>	<b>60</b>	<b>78</b>	<b>89</b>	<b>14</b>	<b>40</b>

Figure 4.3

In a set of poor results the A45 and A56 stand out as having seen substantial further deterioration in performance in the two critical performance measurements for road users, the 80mcd/m<sup>2</sup>/lx and 100mcd/m<sup>2</sup>/lx categories.

The overall results for the Dual Carriageway category indicate that some 40% of markings require immediate replacement with nearly two thirds dropping below the industry threshold. Even the roads normally viewed as performing well in the survey (A66 and A75) are showing signs that heavily trafficked sections need to be identified and provided with increased response maintenance to supplement longer term planned maintenance.

Of the remaining Dual Carriageways, there is concern over the performance of the A303, which probably is the best example in the 2002 survey of the accelerated deterioration of markings once they have dropped below the

100mcd/m2/lx level. With nearly 50% of all markings now below the Highways Agency immediate replacement threshold, there is a need for the maintenance agents for the A303 to take urgent action.

Having provided the poorest results in the 2001 survey the sample for single carriageway 'A' roads is only saved from that placing again not by a dramatic improvement in performance but by the decline in Dual Carriageways. The 2002 survey again indicates a decline in marking quality that is as dramatic as it is worrying, with every road bar one deteriorating in the critical 80 and 100 mcd/m2/lx categories. Within this the performance of two roads, the A352 and A629 provide appalling results with 70% and 80% of markings respectively requiring immediate replacement.

Figure 4.4

SINGLE 'A'	Km surveyed 2001	Km surveyed 2002	%age lines below 100mcd/m2lx 2001	%age lines below 100mcd/m2lx 2002	%age lines below 150mcd/m2lx 2001	%age lines below 150mcd/m2lx 2002	%age lines below 80mcd/m2lx 2001	%age lines below 80 mcd/m2lx 2002
Road Surveyed								
A7	53.5	51.6	21	54	62	75	6	16
A59	18.6	17.7	43	78	99	97	8	55
A68	25.5	24.6	28	44	79	80	4	19
A161	46.2	38.2	44	74	87	67	16	59
A352	18.6	18.4	56	86	91	86	18	70
A356	23.2	22.7	57	79	93	88	21	57
A358	14.1	13.5	53	22	91	60	11	8
A359	24.9	23.8	38	45	97	91	11	18
A361	23.6	22.4	39	46	80	85	14	27
A373	16.8	23.8	53	35	91	75	23	28
A629	41.2	34.4	63	94	97	87	22	80
<u>A709</u>	<u>16.0</u>	<u>16.2</u>	<u>36</u>	<u>58</u>	<u>92</u>	<u>82</u>	<u>12</u>	<u>40</u>
TOTAL / AVERAGE	322.2	299.5	44	60	88	81	13	40

## SECTION 6: CONCLUSIONS

The results of the 2002 Survey make depressing reading. Despite the concern expressed as a result of the 2001 Survey it is evident ever more urgent action is needed to address the issues raised by the report on that survey. There has been a further marked decline in the quality of road markings in the UK and therefore a related reduction in the safety on our roads.

There is clearly a case for increasing the investment in the road marking infrastructure across the UK as there is substantial evidence that road markings reduce accidents and save lives – the fact that repeated surveys show a deteriorating situation is we believe a clear reflection that there is a need, at a national level, for someone to take responsibility for ensuring this principle element of road safety is accorded the importance it deserves.

Despite repeated recommendations since 1999 that regular monitoring and clearly programmed maintenance at required intervals is introduced, this has only been partly adopted by some responsible authorities, leading to an on going deterioration that will now require significant investment to address.

Britain traditionally has a reputation for comparatively high levels of road safety, however with in excess of 3 000 deaths per year, the level of fatalities is still unacceptably high. We fear that, despite the efforts of a steadfast few, complacency and/or a lack of understanding over the basic safety of our road infrastructure, in many responsible authorities, could be endangering road users throughout the country.

Our recommendations are detailed at Section 2 of this summary report and we sincerely hope that this year these recommendations will be acted upon in order that next year we can be reporting on the first measurable improvement in the quality of the most basic road safety feature – the road marking – for seven years.

**THE ROAD SAFETY MARKINGS ASSOCIATION REPRESENTS THE  
UK ROAD MARKING INDUSTRY AT HOME AND ABROAD.  
IT IS ALSO AN ACTIVE PROMOTER OF ENHANCED ROAD SAFETY THROUGH THE  
IMPROVEMENT OF UK ROAD INFRASTRUCTURE.**