

# **Department for Transport**

## **Assessing the Extent of Street Works and Monitoring the Effectiveness of Section 74 in Reducing Disruption**

**Third Annual Report April 2003 to March 2004**

**July 2004**

**Volume 1**

**Main Report**

# Table of Contents

Executive Summary .....	4
ES1. Introduction .....	4
ES2. Study Objectives.....	4
ES3. Methodology .....	4
ES4. Findings of the Study – The Extent of Street Works .....	6
ES5. Effectiveness of section 74 .....	10
ES6. Conclusions .....	17
ES7. Recommendations .....	18
1. The Statutory Background.....	20
1.1 NRSWA .....	20
1.2 Electronic Transfer of Notices (EToN) .....	20
1.3 Section 74 .....	21
2. Halcrow Study .....	22
2.1 Scope .....	22
2.2 Methodology .....	23
3. Extent of Street Works.....	25
3.1 Indicators of Extent of Street Works .....	25
3.2 Number of Days of Works – Sample Authorities .....	25
3.3 Number of Days of Work – All Authorities .....	27
3.4 Number of Works per Month – Sample Authorities.....	27
3.5 Number of Works per Month – All Authorities .....	29
3.6 Total Number of Works .....	29
3.7 Definition of Phases of Works .....	31
3.8 Identification of Phases .....	32
3.9 Number of Works per Month by Utility Sector by Works Category – All Authorities .....	34
3.10 Number of Works with Excavations – Sample Authorities.....	40
3.11 Average Area of Works.....	44
3.12 Extent of Works – Overall Conclusion .....	46
4. Effectiveness of Section 74 in Reducing Unnecessary Disruption from Street Works.....	47
4.1 Indicators of Effectiveness.....	47
4.2 Average Duration of Works.....	48
4.3 Percentage Overruns.....	50
4.4 Works Completed Within Estimate .....	52
4.5 Performance of the Sample Authorities in Applying Section 74 .....	54
4.6 Invoicing and Amounts Recovered .....	60
5. Highway Works .....	64
5.1 Introduction & Background .....	64
5.2 Further Work Undertaken.....	64
5.3 Conclusion and Summary.....	65
6. Works in the Footway.....	66
6.1 Introduction .....	66

6.2	Inclusion of Footway Works in Estimation of Delay Costs .....	68
7.	Conclusions .....	69
7.1	Receipt of Data by Halcrow from the Authorities .....	69
7.2	Noticing Procedures .....	69
7.3	Extent of Street Works .....	69
7.4	Soundness of the Scheme.....	70
7.5	Effectiveness of Section 74 in Controlling Disruption .....	70
7.6	Performance of the Authorities .....	70
7.7	Use of Phases .....	71
7.8	Highway Works.....	71
7.9	Data Quality .....	71
7.10	The Gazetteer .....	71
7.11	General .....	71
8.	Recommendations.....	73
8.1	The Section 74 Scheme and supporting Regulations.....	73
8.2	Application of the Section 74 Scheme by Street Authorities .....	73
8.3	The Noticing Regime .....	73
8.4	Highway Works.....	74
APPENDIX A – Brief.....		75
APPENDIX B - Methodology for Study .....		77
B1.	Introduction .....	77
B2.	Proposed approach .....	77
B3.	Questionnaires .....	77
B4.	Data Acquisition .....	78
B5.	Selection of representative sample for monitoring purposes .....	78
B6.	Measurement of the Effectiveness of section 74 .....	80
B7.	Highway Works.....	80
B8.	Outputs.....	80
APPENDIX C - Record of Notices Received from Sample Authorities.....		81
C1.	Record of Notices Received up to April 2004 from the Sample Authorities .....	81
APPENDIX D - Data Quality and Verification of Notices .....		82
D1.	Introduction .....	82
D2.	Authorities – Storage and Transfer of Electronic Notices for section 74.....	82
D3.	Data Quality .....	82
APPENDIX E - Third Questionnaire to the Authorities.....		89
E1.	Introduction .....	89
E2.	Third Questionnaire.....	89
E3.	Purpose of the Questionnaire .....	90
E4.	Summary of Responses .....	90
APPENDIX F - Second Questionnaire to the Utilities.....		98
F1	Introduction .....	98
F2	Second Questionnaire .....	98
F3	Summary of Responses .....	99



# **Executive Summary**

## **ES1. Introduction**

**ES1.1** Section 74 was implemented by Regulations on 1st April 2001. Halcrow was appointed by the Department for Local Government, Transport and the Regions (now the Department for Transport) in February 2001 to monitor the operation of section 74. This is Halcrow's third and final Annual Report on the extent of street works in England and the effectiveness of section 74 of the New Roads and Street Works Act 1991 (NRSWA) in reducing unnecessary disruption on the highway from utilities' street works.

This Report is issued in three volumes namely:

Volume 1 – the Main Report of which this Executive Summary is a part

Volume 2 – Tables and Charts

Volume 3 – Estimation of the Cost of Delay from Utilities' street works

Volume 3 contains technical descriptions of the modelling techniques that have been employed to obtain estimates of the cost of delay.

**ES1.2** An Interim Report on Halcrow's findings was provided to Ministers in March 2002. The first Annual Report covering the first year operation from 1st April 2001 to 31st March 2002, was published in October 2002. A second Annual Report was published in October 2003.

## **ES2. Study Objectives**

**ES2.1** The Study had two main objectives:

- (i) to collect information on the extent and characteristics of street works, including their duration, that would allow a reliable picture to be derived for England as a whole
- (ii) to demonstrate how far the use of section 74 powers by highway authorities has led to a reduction in the length of time taken by the utilities to complete their street works.

## **ES3. Methodology**

**ES3.1** Data has been collected since April 2001 from 25 highway authorities that have elected to operate section 74 and agreed to participate in the Study. These are as follows:

- 5 'inner' London Boroughs
- 5 'outer' London Boroughs
- 5 county councils
- 5 metropolitan authorities

- 5 unitary authorities

The list of participating authorities is at Appendix B (“Methodology”), paragraph B5.8 of Volume 1 of this Report and reproduced here.

Classification	Highway Authorities
County Councils	Devon, East Sussex, Gloucestershire, North Yorkshire, Nottinghamshire
Inner London Boroughs	Greenwich, Hammersmith and Fulham, Kensington and Chelsea, Newham, City of Westminster
Outer London Boroughs	Barking and Dagenham, Bexley, Bromley, Croydon, Harrow
Metropolitan Authorities	Coventry, Doncaster, Kirklees, Leeds, Newcastle upon Tyne
Unitary Authorities	Bath and North East Somerset, Bristol, City of Derby, York, City of Nottingham

**ES3.2** The above authorities provided, in monthly batches, copies of the electronic notices that are exchanged with the utilities for the purpose of co-ordination of their street works. Information that can be found within these notices includes the proposed and actual timing of the works including interruptions, and the dimensions of the permanent repair to the highway following completion.

**ES3.3** A check process was developed to verify that the data in the notices conforms to the requirements of the Regulations and the Code of Practice for Co-ordination of Street Works. Copies of the notices have been collected since April 2001 and all data has been passed through the check process prior to use. Our report on the trends in data quality is given in Appendix D of Volume 1 of this Report.

**ES3.4** Indicators of the extent of street works and the effectiveness of section 74 are as follows:

(i) **Extent of Street Works;**

The number of days of occupation in executing the works;

The number of works executed;

The number of excavations;

The average area of the works.

(ii) **Effectiveness of section 74 in Reducing Unnecessary Disruption;**

(a) The average duration of the works;

(b) The total number of days that works have overrun;

(c) The number of works where the utilities’ actual durations are lower than their estimates and the extent of those underestimates.

**ES3.5** Results were calculated for the sample authorities and then extrapolated for the whole of England. The information that has been provided month on month amounts to some 7 million records accumulated up to the end of March 2004. It has been used to estimate averages for the above indicators and to obtain a picture of the trends in indicators over the two years of operation of section 74. The data is described in detail in Sections 3 (for the Extent of Street Works) and 4 (for the Effectiveness of section 74) and in Volume 2.

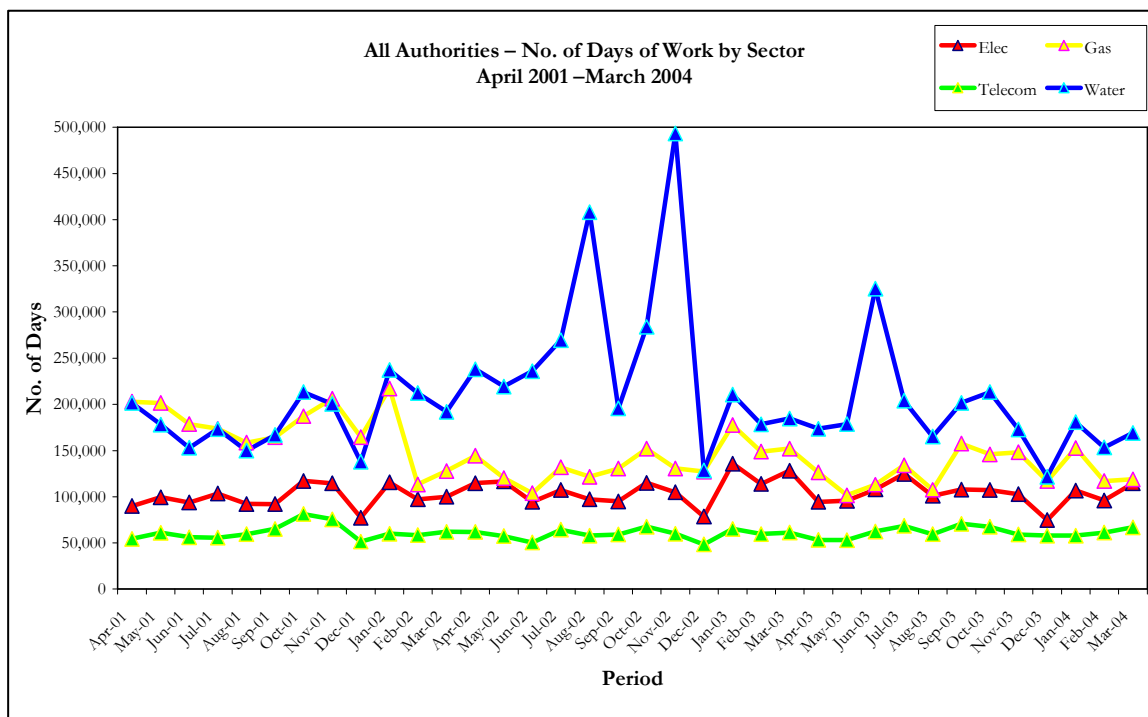
## ES4. Findings of the Study – The Extent of Street Works

### ES4.1 Number of Days of Works – All Authorities

The extrapolated average number of days of works per month is given in the table below for each utility sector. Any variations in the indicator appear to be seasonal only.

Period	Elec	Gas	Telecom	Water	All
Apr 01-Sep 01	95,159	180,005	58,655	170,505	504,325
Oct 01 - Mar 02	103,573	169,387	64,762	198,824	536,546
Apr 02- Sep 02	104,225	125,408	58,511	261,131	549,274
Oct 02-Mar 03	112,734	148,096	60,353	246,593	567,776
Apr 03 - Sep 03	105,214	123,381	61,265	208,115	497,974
Oct 03-Mar 04	100,362	133,231	61,793	168,514	463,900
Overall Average	103,544	146,585	60,890	208,947	519,966

This appears to be confirmed by the trend in this indicator for each sector from April 2001 to March 2004 (shown below). (The unusual peaks for the water sector were due to inconsistencies in the data provided by one water utility between August 2002 and June 2003 that could not be eliminated).

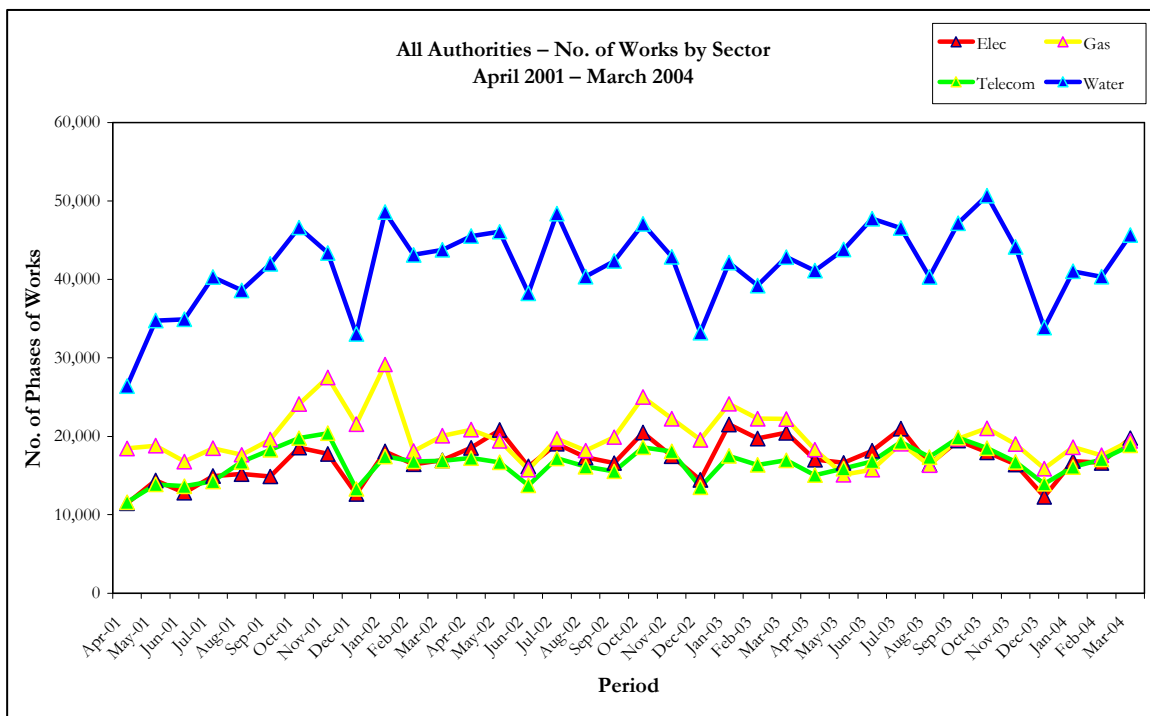


## ES4.2 Number of Works – All Authorities

The extrapolated number of works per month is again given in the table below for each six-month period. (A phase is a discrete period of continuous occupation of the highway that is associated with at least one other period of occupation with a pause in between).

Period	Elec		Gas		Telecom		Water		All	
	Works	Phases	Works	Phases	Works	Phases	Works	Phases	Works	Phases
Apr 01 - Sep 01	14,000	14,000	18,300	18,400	14,700	16,400	36,200	45,400	83,100	94,200
Oct 01-Mar 02	16,800	17,000	23,400	23,800	17,400	22,200	43,100	60,400	100,700	123,300
Apr 02-Sep 02	18,100	18,400	19,000	19,300	16,100	20,600	43,500	61,600	96,600	120,000
Oct 02-Mar 03	19,000	19,800	22,600	23,200	16,800	21,500	41,200	56,500	99,700	121,000
Apr 03-Sep 03	18,100	19,000	17,400	17,800	17,400	22,300	44,500	59,700	97,300	118,800
Oct 03-Mar 04	16,700	17,400	18,600	19,300	16,900	22,100	42,600	58,600	94,700	117,300
Overall Avg.	17,100	17,600	19,900	20,300	16,600	20,800	41,800	57,000	95,400	115,800

The associated chart of trends is shown below.





### ES4.3 Estimated Number of Works per Annum – All Authorities

The number of works per annum from the table above has been calculated from April 2003 to March 2004 as being 1.2 million excluding unclosed works and abandoned works.

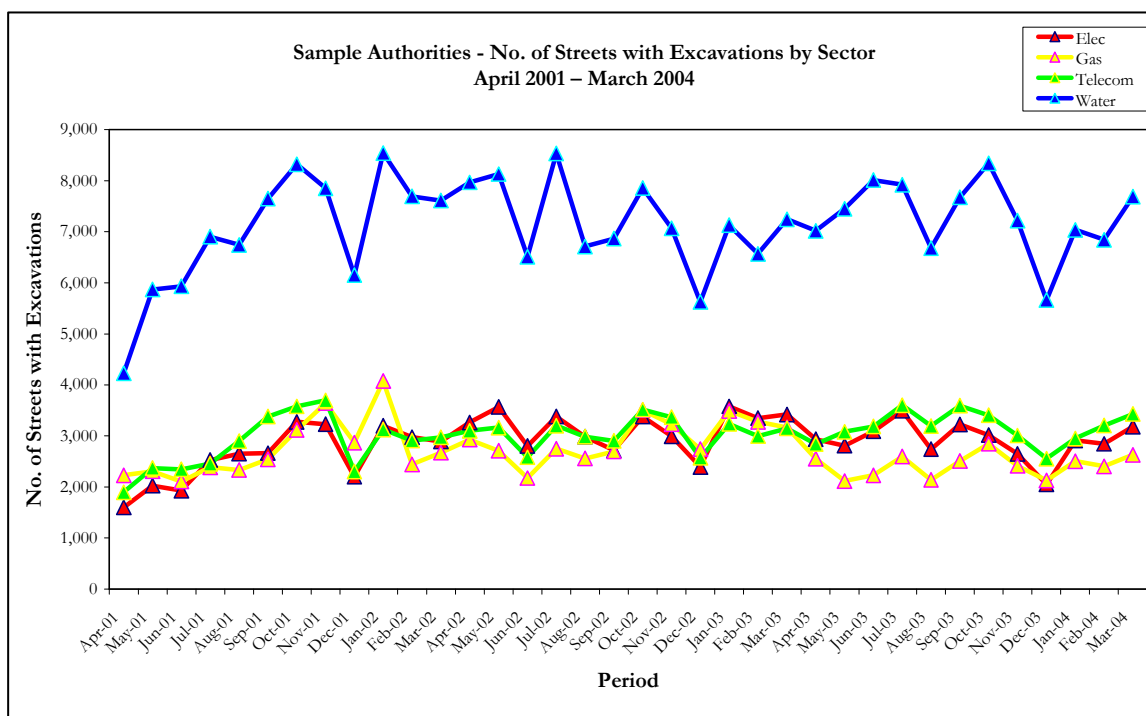
### ES4.4 Number of Works with Excavations – Sample Authorities

This indicator has been estimated by counting the number of streets within each works with excavations. This avoids situations that may lead to potential overestimates of excavations e.g. trenches that traverse the whole of a street cross-section are counted as one excavation, although the carriageway, footway, verge and cycleway should be recorded as individual sites. This method also correctly counts multiple works with excavations should they occur at the same time on the same street.

The average number of excavations per month for the sample authorities is shown in the table below for comparison between sectors and between periods.

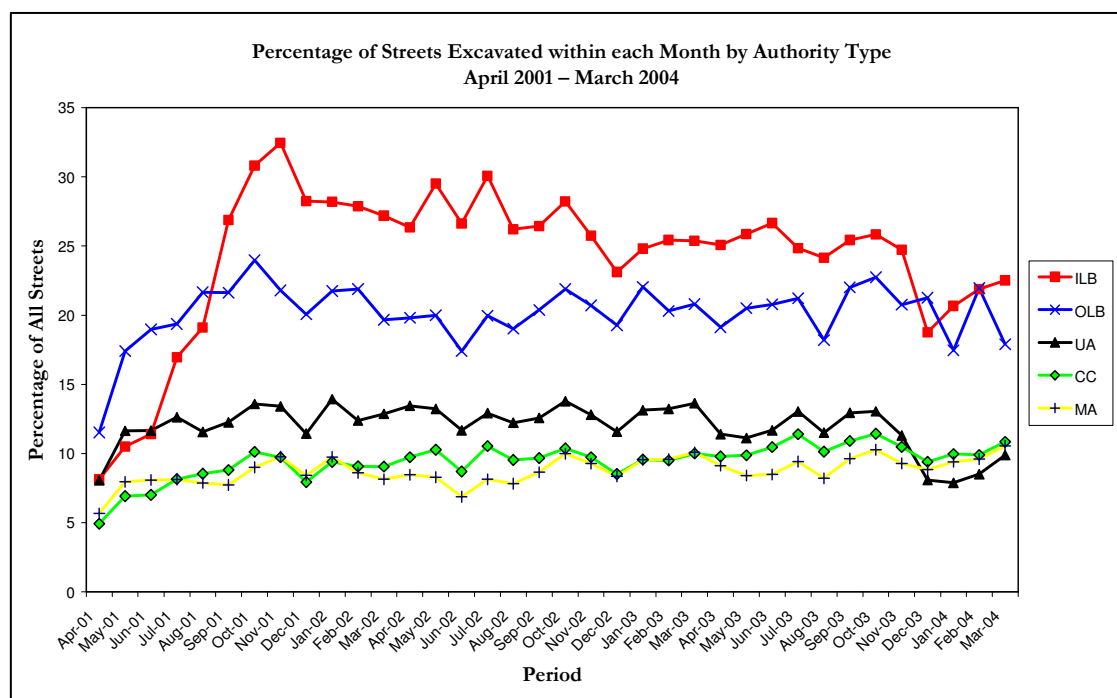
Period	Elec	Gas	Telecom	Water	All
Apr 01-Sep 01	2,200	2,300	2,600	6,200	13,300
Oct 01 - Mar 02	3,000	3,100	3,100	7,700	16,900
Apr 02- Sep 02	3,100	2,600	3,000	7,500	16,200
Oct 02-Mar 03	3,200	3,200	3,100	6,900	16,500
Apr 03-Sep 03	3,000	2,400	3,200	7,500	16,100
Oct 03-Mar 04	2,800	2,500	3,100	7,100	15,500
Overall Average	2,900	2,700	3,000	7,100	15,800

The chart below shows the monthly trend in this indicator for each sector since the start of section 74.



The number of excavations overall appears to be highest in the water sector with a monthly average that is almost double that of any other sector. All other sectors display similar levels and patterns of activity.

Excavations cause disruption and an assessment of potential problems in different areas of the country can be assessed by examining the concentration of excavations within different highway authority areas. The chart below shows the percentage of streets with excavations month by month. Each curve represents a different highway authority area.



The legends are:

ILB – Inner London Boroughs (red)

OLB - Outer London Boroughs (blue)

UA – New Unitary Authorities (black)

CC – County Councils (green)

MA – Metropolitan Authorities (yellow)

This chart is developed from data supplied by the sample authorities and shows a considerable difference between Inner London Boroughs and the rest of the sample authorities including Outer London Boroughs with up to 33% of streets excavated in any month.

## ES5. Effectiveness of section 74

### ES5.1 Standard Indicators of the Effectiveness of section 74 in Reducing Disruption

The indicators that have been chosen are (Section 3.4.2 above):

- (i) The average duration of works
- (ii) The number of days by which works overrun
- (iii) the number of works where the utilities' actual durations are lower than their estimates and the extent of those underestimates

### ES5.2 Average Duration of Works

The average duration of works is likely to be greater for major and standard works than for minor works. This indicator has been tabulated within each of the most common works categories for each utility sector and at intervals of six months.

**Table – Electricity Sector – Average Duration of Works per Month (Days) – All Authorities**

Avg Duration for Period	Standard	Minor with Excav	Urgent	Emergency
Apr 01 - Sep 01	8	3	7	7
Oct 01 - Mar 02	8	3	6	6
Apr 02 - Sep 02	7	3	6	6
Oct 02 - Mar 03	7	3	6	6
Apr 03 - Sep 03	7	3	6	6
Oct 03 - Mar 04	7	3	6	6

**Table – Gas Sector – Average Duration of Works per Month (Days) – All Authorities**

Avg Duration for Period	Standard	Minor with Excav	Urgent	Emergency
Apr 01 - Sep 01	10	7	6	9
Oct 01 - Mar 02	7	4	4	7
Apr 02 - Sep 02	6	4	4	6
Oct 02 - Mar 03	6	5	4	7
Apr 03 - Sep 03	7	7	5	6
Oct 03 - Mar 04	6	7	5	7

**Table – Telecom Sector – Average Duration of Works per Month (Days) – All Authorities**

Avg Duration for Period	Standard	Minor with Excav	Urgent	Emergency
Apr 01 - Sep 01	10	3	3	2
Oct 01 - Mar 02	9	3	3	2
Apr 02 - Sep 02	10	3	3	2
Oct 02 - Mar 03	9	3	3	2
Apr 03 - Sep 03	8	3	3	2
Oct 03 - Mar 04	8	3	3	2

**Table – Water Sector – Average Duration of Works per Month (Days) – All Authorities**

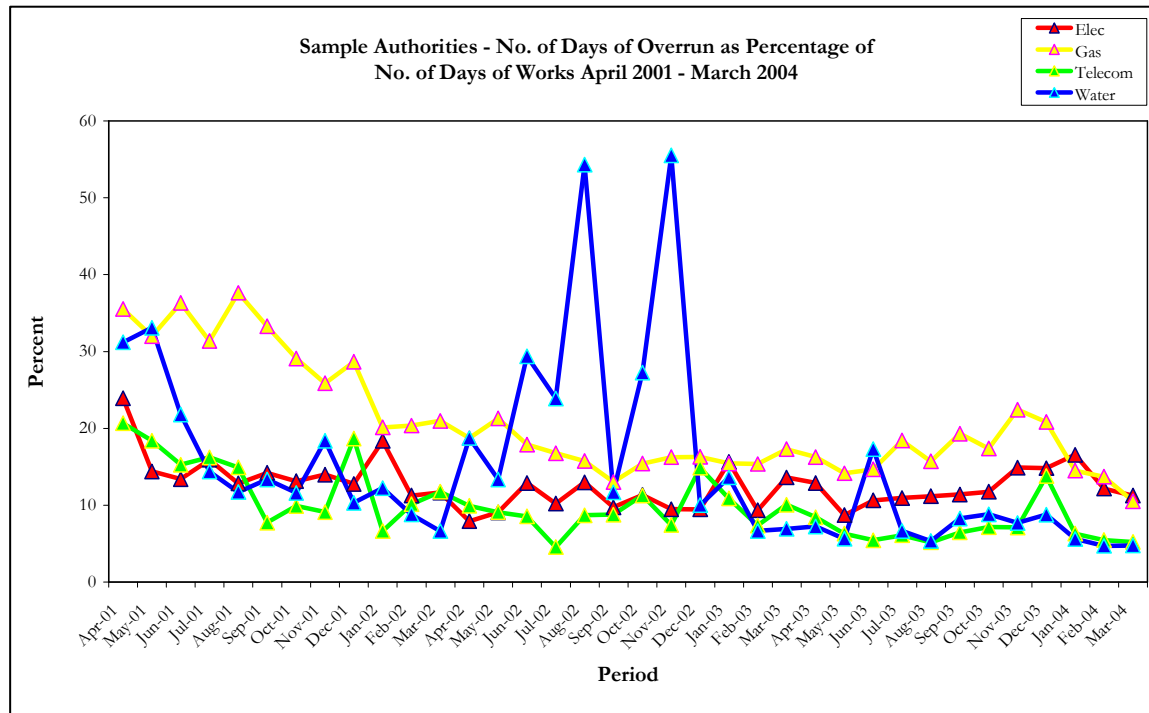
Avg Duration for Period	Standard	Minor with Excav	Urgent	Emergency
Apr 01 - Sep 01	12	3	4	2
Oct 01 - Mar 02	11	3	4	3
Apr 02 - Sep 02	24	3	4	3
Oct 02 - Mar 03	24	3	3	3
Apr 03 - Sep 03	15	3	3	4
Oct 03 - Mar 04	11	3	3	4

The average duration of works within each works category appears to be similar for all sectors with one exception (the water sector, where standard works are longer than for any other sector).

### ES5.3 Amount of Overrun

The table and chart below show for the sample authorities, for each sector, the trend in overrun as a percentage of the total time of occupation of the highway for execution of utilities' works.

Period	Elec (%)	Gas (%)	Telecom (%)	Water (%)	All (%)
Apr 01 - Sep 01	14.9	34.4	14.6	18.7	23.0
Oct 01 - Mar 02	12.1	24.5	9.9	11.6	15.5
Apr 02 - Sep 02	8.5	16.5	7.3	29.8	20.3
Oct 02 - Mar 03	9.9	15.1	8.6	28.7	19.1
Apr 03 - Sep 03	9.1	16.4	5.3	9.5	10.6
Oct 03 - Mar 04	11.7	16.2	6.4	5.9	10.3



The percentage of overruns in the gas and electricity sectors appear to have increased after August 2003 after consistent reductions from January 2002 to July 2003. The unusual peaks for the water sector should be ignored as they are due to inconsistencies in the data provided by one utility between August 2002 and June 2003 that could not be eliminated for the analysis.

## ES5.4 Number of Works Within Estimate

The incidence of completion of works within the original estimate of completion has also been investigated. This might point to two different attitudes to section 74. On the one hand the utilities have increased their estimates in order to avoid charges, and on the other the authorities are not challenging the estimates.

The table below shows the following for each sector:

**A (%)** - the percentage of works that are completed within estimate i.e. the works are over-estimated

**B (%)** – the number of days by which the final estimated duration exceeds the actual duration of the works.

Month	Elec		Gas		Telecom		Water	
	A (%)	B (%)	A (%)	B (%)	A (%)	B (%)	A (%)	B (%)
Apr-01	44	41	43	54	16	43	53	50
May-01	59	40	46	52	25	41	59	50
Jun-01	58	41	47	50	21	43	63	50
Jul-01	46	43	42	49	32	42	62	48
Aug-01	42	44	45	49	28	41	63	48
Sep-01	42	41	47	49	37	41	67	46
Oct-01	40	42	49	45	27	40	66	47
Nov-01	37	42	56	44	23	39	68	47
Dec-01	40	40	56	46	29	41	68	46
Jan-02	40	43	54	45	28	42	65	45
Feb-02	42	42	61	49	28	42	63	41
Mar-02	37	42	56	45	30	43	60	45
Apr-02	44	43	58	44	33	42	65	46
May-02	42	47	57	45	34	42	66	44
Jun-02	46	45	53	44	32	42	64	44
Jul-02	45	45	54	45	31	41	61	42
Aug-02	43	43	51	42	36	42	59	43
Sep-02	46	41	52	41	34	42	65	49
Oct-02	41	41	54	43	36	43	64	47
Nov-02	44	43	51	43	33	43	62	47
Dec-02	45	43	53	47	34	43	67	52
Jan-03	42	40	54	40	34	44	65	47
Feb-03	41	40	53	42	29	43	64	48
Mar-03	42	39	56	40	29	41	64	50
Apr-03	46	43	52	40	31	41	62	47
May-03	45	43	53	42	34	42	64	46
Jun-03	44	43	50	38	35	39	63	48
Jul-03	41	44	46	41	35	40	61	49
Aug-03	39	37	41	39	37	48	59	50
Sep-03	41	43	40	35	37	41	59	50
Oct-03	41	39	39	38	32	39	58	51
Nov-03	37	39	36	36	30	40	59	48

Dec-03	39	41	36	41	28	39	59	51
Jan-04	39	41	38	32	24	41	57	46
Feb-04	39	40	41	36	27	40	56	50
Mar-04	39	52	43	35	22	42	57	49

On the whole the percentage of works that are completed within estimate is between 30% and 50%, and the amount of this underestimate varies between 40% and 50% of the number of days of work.

#### **ES5.5 Performance of the Authorities in Applying section 74**

Although there is a perceived reduction in the amount of overrun, there is also evidence that this has been achieved by re-estimating the works. Major and standard works are the works of longest duration. The following table shows the percentage of works that are overestimated compared with the percentage of major and standard works that overrun. The table shows that for all sample authorities the level of overestimating is high enough to reduce the incidence of overrunning, and in general the sample authorities are allowing this to happen.

Authority	Percentage of Overestimated Works						Percentage of Works that Overrun					
	Apr01-Sep01	Oct01-Mar02	Apr02-Sep02	Oct02-Mar03	Apr03-Sep03	Oct03-Mar04	Apr01-Sep01	Oct01-Mar02	Apr02-Sep02	Oct02-Mar03	Apr03-Sep03	Oct03-Mar04
BarkDag	55.9	58.3	43.6	50.8	56.6	58.5	5.3	3.8	5.2	5.0	11.8	7.5
BathNES	50.5	56.9	50.2	49.7	35.5	29.4	17.7	6.0	4.4	3.3	3.6	2.3
Bexley	65.5	59.7	61.3	61.1	54.8	54.4	10.5	5.1	3.2	5.5	7.2	6.9
BristolCity	62.5	66.0	70.1	71.2	66.2	59.4	12.1	6.1	1.3	1.5	1.9	1.5
Bromley	53.6	70.7	57.7	57.6	53.8	49.2	23.0	4.1	3.3	6.1	4.4	3.8
Coventry	33.3	42.7	22.2	51.1	53.4	50.7	7.1	8.9	11.1	6.2	1.4	1.0
Croydon	51.3	63.2	53.8	50.3	50.8	40.4	27.8	4.5	5.0	5.4	3.1	6.2
DerbyCity	43.0	54.5	38.1	35.8	41.0	35.8	34.1	19.3	5.4	6.9	6.8	9.2
Devon	40.9	42.1	38.8	37.2	37.9	31.0	13.4	8.3	5.5	3.0	4.1	2.8
Doncaster	80.7	77.1	70.7	60.5	39.5	34.2	9.0	7.5	2.2	2.3	5.8	16.0
EastSussex	50.9	59.7	56.9	60.3	59.7	45.3	20.2	4.5	1.7	3.5	0.8	1.7
Glos	43.4	52.6	59.7	55.0	40.3	33.4	20.0	7.2	2.2	1.6	4.2	1.6
Greenwich	63.7	57.8	53.5	61.8	63.0	61.3	7.4	3.5	5.3	6.8	2.5	1.8
HamFulham	48.4	51.0	43.8	43.2	54.8	55.8	9.8	9.4	2.5	2.7	6.0	13.5
Harrow	61.8	46.6	47.2	30.1	49.8	54.5	18.9	12.0	7.9	10.4	8.2	11.4
KensChelsea	55.1	52.2	46.0	45.4	55.1	57.4	14.3	5.8	1.8	3.4	9.3	10.4
Kirklees	51.9	43.1	43.4	31.3	19.7	19.9	11.9	8.0	2.8	2.3	1.6	10.5
LeedsCity	60.0	41.9	43.8	36.5	24.8	22.1	11.3	10.9	2.7	2.5	1.8	14.3
Newcastle	58.2	63.0	67.5	55.6	41.8	42.1	5.5	5.3	1.4	1.7	2.2	1.5
Newham	55.8	58.2	51.2	57.3	59.9	57.4	14.2	3.5	4.9	2.7	5.4	10.2
NYorkshire	53.9	46.6	57.5	45.5	47.1	37.2	10.0	11.4	1.7	2.8	1.6	8.8
NottCity	51.1	49.2	41.1	36.9	33.7	32.3	22.7	13.8	1.9	4.8	12.9	10.6
NottShire	55.0	66.0	67.0	56.1	43.4	38.3	25.5	13.4	3.7	6.2	7.8	10.7
Westminster	67.7	62.8	49.4	60.0	56.7	58.7	7.0	4.8	2.1	5.2	5.2	9.4
YorkCity	44.6	41.2	55.7	54.4	52.6	34.9	10.8	12.1	4.6	5.3	3.6	25.3



## **ES5.6 Section 74 Invoices and Amounts Recovered**

The noticing regime does not include a mechanism for the transparent calculation of penalties arising from overruns of occupation of the highway. Halcrow has therefore requested details of invoices and amounts paid from the 25 sample authorities separately from its receipt of copies of the notices. Up to the time of compilation of this Report, data relating to invoicing had been obtained from 9 authorities. One of the reasons for this lack of response is that at least three of the authorities that claimed to be operating section 74 had not invoiced the utilities for perceived overruns. IN addition, a number of authorities indicated that the noticing regime does not presently clearly distinguish between works that are the utilities' own works and those that are carried out on behalf of the authorities. This leads to delays in the resolution of the amounts due and the creation of a natural resistance to pay by the utilities.

Instead, invoices and amounts recovered have been reported on using information from the third questionnaire to the authorities (Appendix E of this Report). 88 authorities responded to the questionnaire, of whom 35 provided detailed information on invoicing and amounts received for the calendar year 1<sup>st</sup> January 2002 to 31<sup>st</sup> December 2003. .

The following is a summary of the information provided by the 35 authorities:

Amount Invoiced (£)	15,640,000
Amount Recovered (£)	4,802,242
Percentage Recovered (%)	31

We believe that more effective operation of the section 74 scheme would be achieved by actioning the following:

- (i) Clear identification of those works that are exempt from charging
- (ii) More rigorous debt recovery by the authorities
- (iii) Abandonment of discretionary charging by the authorities

Further details of invoicing and charge recovery are provided in Section 4.6 of this Report.

## **ES5.7 Works in the Footway**

The information from the copies of the notices received by us indicate that the majority of the works carried out by the utilities take place in the footway. However there is insufficient information to indicate the extent to which barriers, spoil or plant associated with footway works encroach on to the carriageway.

A limited inspection of footway works that occurred in the North of England was carried out in November 2003. Details of the results of these inspections are given in Section 6 of Volume 1 of this Report.

A total of 209 works out of 281 inspected were notified as being in the footway. Of these, a total of 70 i.e. 33.5%, were observed to include occupation of the carriageway.

Accordingly, we have included 30% of all footway works as obtained from the copies of the notices in our estimates of the cost of delay from street works (Volume 3 of this Report).

## **ES6. Conclusions**

**ES6.1** The conclusions from monitoring of the three years of operation of section 74 are described in detail in Volume 1 Section 7 of this Report and are as follows:

- (i) The scheme remains fundamentally sound although review of the secondary legislation may be required as a result of the judgement in the Leicestershire versus Transco case. The remaining conclusions relate to the degree of clarity in the regime and in its application by the authorities and utilities.
- (ii) In general data has been received consistently month on month from the sample authorities since October 2001, and staff within the authorities have been unhesitating in their help in recovering missing batches or explaining apparent anomalies in trends.
- (iii) The authorities report a continuing general scarcity of experienced staff for overall street works management.
- (iv) Overall the utilities appear to be carrying out their works in similar seasonal patterns, although the extent of their works may be different.
- (v) The number of works undertaken per annum was estimated at 1.1 million in the 2003 Annual Report and this has been re-estimated at 1.2 million per annum in this report. This slight increase is attributed to the availability of a greater number of records for analysis as a result of the improved consistency in the information available to Halcrow.
- (vi) The average duration of works has stabilised at between 5 and 6 days in each six-month period. The duration of standard, urgent and emergency works varies by sector with the longest average duration achieved by standard works for the water sector. The amounts of overrun also appear to be reducing, but are affected by the utilities' practice of increasing their estimates without challenge from the authorities.
- (vii) The utilities appear to be overestimating the duration of their major and standard works by at least 35% and up to 50%.more than the actual durations of these works. Moreover, the utilities appear to be significantly increasing the estimates of their street works while the works are in progress. The re-estimated durations are found to have exceeded the actual durations by up to 30%.
- (viii) In spite of the proliferation of overestimating, there is evidence from our survey of the authorities that they are not challenging sufficiently. Effective challenging however is hampered by the weakness in the present noticing regime that could be rectified if the Third Edition of the Co-ordination Code were implemented.
- (ix) The water sector continues to be responsible for the greatest time of occupation of the highway overall in any month (averaging 208,000 days per month). This is more than double that for the electricity sector and more than 50% greater than that for the gas sector.

- (x) Works appear to be undertaken increasingly in multiple phases that are marked by notices of temporary evacuation of the highway. One utility however uses such notices to abandon or postpone its works. The receiving authority cannot coordinate works in such circumstances.
- (xi) There is no data available on the extent and duration of the authorities' own works on the highway.
- (xii) The quality of gazetteers continues to give cause for concern. There is inconsistency between authorities and in at least one case key information has not been included.
- (xiii) A number of aspects of the utilities' occupation of the highway are not covered by the present noticing regime. These include the notification of cancellation of works and presentation of notices relating to the same works in sequence.

## **ES7. Recommendations**

- ES7.1** Halcrow concludes that the Section 74 scheme, based on derivation of works durations from notices provided by the undertakers, remains fundamentally sound.
- ES7.2** The Court of Appeal, in the recent Leicestershire -v- Transco hearing, highlighted an anomaly in the regulations. Halcrow recommend that the Section 74 regulations are amended to correct this anomaly. The Court of Appeal also ruled that the deeming provision, relating to the continuation of works and calculation of overrun periods, is rebuttable. Halcrow recommends that the regulations are amended to ensure that a notice based scheme, as originally developed by the Department and HAUC, is fully supported by legislation. Halcrow recommends that an inspection based scheme for operating Section 74 is not adopted.
- ES7.3** It is clear, that regardless of the intent of the scheme, the financial consequence to undertakers will inevitably result in the legislation being challenged. Nevertheless, application of the scheme has produced real benefits and the continued use of the scheme should be encouraged.
- ES7.4** It is recommended that measures are implemented to ensure that the Section 74 provisions, where adopted by street authorities, are effectively applied. Halcrow does not suggest that the use of Section 74 should be mandatory as some authorities may wish to take a different approach to the management of streets works. For example, they may wish to apply the powers available through Section 59/60, Section 56 and Section 66 of the Act or even the Permit powers proposed within the Traffic Management Act.
- ES7.5** However, where the scheme is adopted by an authority, the application of the scheme should be rigorous. The proposed Network Management Duty included within the Traffic Management Act provides an opportunity for performance indicators to be implemented that would require an authority to demonstrate the effective use of Section 74, and other provisions within the NRSWA.
- ES7.6** We have previously highlighted the failure of authorities to provide sufficient resources for the management of street works. This lack of resource is something highlighted by authorities themselves but is also evident through, for example, the general poor quality and low update frequency of the National Street Gazetteer. Halcrow has no specific

recommendation in respect of resource levels directed at the management of street works, but it is clear that Ministers intend to address the problem with the Traffic Management Act.

- ES7.7** The existing noticing regime requires a radical overhaul in order to fully support the operation of Section 74 and other street works functions (and the Network Management Duties).
- ES7.8** The Second Annual Report put forward a number of key recommendations relating to notification procedures, namely: overall simplification; clarification of rules; validation of systems, and; development of a functional specification. Many of the detailed suggestions put forward were incorporated into the draft Third Edition of the 'Co-ordination' Code of Practice.
- ES7.9** It is not known if it is intended that the Third Edition will eventually be published or whether a more comprehensive overhaul of the document is planned. The new legislation currently progressing through Parliament offers an excellent opportunity to address all of the existing problems and implement the necessary changes. Halcrow strongly recommends that this opportunity to update the noticing procedures is exploited.
- ES7.10** The disparity between the requirements for the registration of highway works and the requirements for the notification of street works is clear to see.
- ES7.11** It is recommended that the same parameters are used for both notification of street works and registration of highway works. Halcrow has previously recommended that, to achieve parity, the less onerous requirements currently applying to highway works should be applied to street works.
- ES7.12** The Steering Group suggested that the common basis for notification and registration should be the current notification requirements for street works. The proposed Network Management Duty will make it essential for Street Managers to have access to information about all activities on the network. In the light of this, Halcrow now recommends that the notification requirements applying to street works are applied to the registration of highway works.

# **1. The Statutory Background**

## **1.1 NRSWA**

**1.1.1** Section 74 is part of the New Roads and Street Works Act 1991 (NRSWA) which became law in 1993, replacing the Public Utilities and Street Works Act 1950 (PUSWA) and parts of the Highways Act 1980. NRSWA was introduced following a review of PUSWA in 1985 (The Horne Report). This highlighted the unnecessary traffic disruption and additional costs to the public arising from the lack of co-ordination of works of all types on the highway.

**1.1.2** Specific measures to improve co-ordination and control of activities on the highway were introduced in NRSWA. Section 59 places a duty on a street authority to co-ordinate utilities' street works, and powers are provided within the Act for this purpose, such as the power to direct a utility as to when street works may take place. Utilities in turn are required to co-operate with street authorities in the process of co-ordination under section 60.

**1.1.3** Section 53 also places a requirement on every street authority to maintain a register of all works on its network. Sections 54 and 55 require the undertaker to notify the street authority of its intention to carry out works on the highway and the progress of those works, and the authority may respond with its own notices seeking clarification or giving directions as necessary. The information in these notices is used to update the register. For the purposes of notification works are categorised as:

- Major Projects
- Standard Works
- Minor Works (with excavation)
- Minor Works (without excavation)
- Urgent Works
- Special cases of Urgent Works
- Emergency Works, and
- Remedial Works

Requirements for advance notification of works are based on the works category with the largest works, falling into the 'Major Projects' category, requiring 1 month advance notification and smaller works, categorised as 'Minor Works', only requiring notification the day before the works are planned to commence.

The advance notice required depends on the works category e.g. major works require at least one month's advance notification whereas minor works need be notified one day in advance.

**1.1.4** The way in which the process of notification and registration operates is set out in the Code of Practice for Co-ordination of Street Works and Works for Road Purposes and Related Matters (commonly known as the "Co-ordination Code").

## **1.2 Electronic Transfer of Notices (EToN)**

**1.2.1** The Horne Report had recommended the establishment of a central street works register that would serve as a single source of information for improved management and co-ordination. This development, known as the Computerised Street and Road Works Register (CSRWR) commenced in 1992 but was abandoned in 1997. While development was

proceeding notices were sent by post or fax, and street works authorities began entering details in their local systems, which came to be known as Notice Management Systems, to facilitate management and co-ordination.

- 1.2.2** When CSRWR was abandoned notices were sent electronically by the undertakers using an agreed format that is described in Appendix E of the Co-ordination Code. The procedure is known as the Electronic Transfer of Notices (EToN) which has been updated for the operation of section 74 as discussed below.

### **1.3 Section 74**

- 1.3.1** Section 74 was included when NRSWA was first introduced but had been held in reserve till such time as Ministers felt that existing measures to control disruption from utilities' street works should be strengthened. It allows a street authority to charge an undertaker for exceeding either the "reasonable" period (the duration of works agreed between the authority and the undertaker) or the "prescribed" period (that set down in the s74 regulations) in executing its street works. Operation of section 74 is not compulsory for a street authority, but any authority wishing to operate section 74 should inform the Department of its intention to do so. We have circulated a third questionnaire to all authorities in England and from the responses we believe that all authorities in England are operating section 74 in principle.
- 1.3.2** The s74 regulations link the rates of charge that can be levied to the number of days of overrun and the reinstatement category of the street on which it occurs. This reinstatement category is described in the Specification for the Reinstatement of Openings in Highways and reflects the relative importance of each street in the highway authority's network. It is the responsibility of each highway authority to identify the reinstatement category of each street under its control in its street gazetteer (a computerised list of streets created in accordance with the rules laid down in British Standard BS7666). Access to the gazetteers for all authorities is currently obtainable through the Ordnance Survey.
- 1.3.3** Where an authority does not populate a gazetteer entry with a value for the reinstatement category it is assumed, for the purpose of calculating charges under the section 74 scheme, to be the lowest category namely 4 for an individual street. The highest category should apply to busy streets that carry a large number of heavy goods vehicles. Overruns on such streets should then attract the highest rates of charge. An authority may agree to waive or reduce charges where it believes this to be appropriate.
- 1.3.4** S74 (3) allows an authority to challenge any estimate of the duration of individual works by an undertaker. The authority's estimate stands as the agreed estimate unless either the two parties agree to an alternate estimate, or the estimate is established by arbitration. S74 also allows the undertaker to revise the estimate of duration as the result of unexpected conditions, with the agreement of the authority.
- 1.3.5** It has been agreed that section 74 should operate on the exchange of notices, and new notices were developed for notification of the actual start date and actual completion date of works by the undertaker. A utility that has the right to carry out street works must send the street authority the appropriate section 74 notices of the actual start and completion dates of works.

## **2. Halcrow Study**

### **2.1 Scope**

**2.1.1** Halcrow was appointed by the Department for Transport (formerly the Department for Transport, Local Government and the Regions) in 2001 to carry out a Study based on the following:

- (i) to collect data held by highway authorities on the number of street works carried out in their area and their characteristics (including duration), and, based on this data, to produce a reliable picture of the situation in England as a whole;
- (ii) using the data collected to demonstrate how far the use of section 74 powers by highway authorities has led to a reduction in the length of time taken to complete street works (and thus its effect on disruption) by reporting on trends.

**2.1.2** An Interim Report on the direction of the Study and findings from our investigation was produced in March 2002. This was followed by two Annual Reports namely:

- (i) the first Annual Report containing an analysis of information on street works collected up to the end of March 2002 i.e. the end of the first year of operation
- (ii) The second Annual Report contains findings from information collected up to the end of March 2003 i.e. the second calendar year of operation of section 74.

**2.1.3** Section 74 was implemented to strengthen the powers of highway authorities to eliminate unnecessary occupation of the highway by the utilities and thereby reduce unnecessary disruption to road users. Traffic surveys and calibrated traffic models are accepted methods of studying the delay to road users arising from likely changes to available road space. The delay is converted to monetary costs using agreed factors for different classes of road (two-way, dual carriageway etc) that are published by the Department. In our first Annual Report we reported on the results of initial traffic surveys that were carried out at the site of a utility's street works on the A361 south of Highworth. This report provided simplified tables for estimation of delay cost for streets of different reinstatement category that experience different traffic flow rates. These tables have now been enlarged in order to provide further breakdowns of the cost of delay. Details will be published in Volume 3 to this Report.

**2.1.4** A considerable number of the utilities' works are notified as taking place in the footway, but may still encroach on the carriageway as a result of the storage of materials, parking of utilities' vehicles and placement of signs and barriers, which could result in delays to road users. To obtain some estimate of the percentages of street works that are notified as occurring in the footway but encroach on the carriageway, a limited survey of street works in York, Harrogate and surrounding rural roads was carried out over a period of four weeks on behalf of the Department. The total number of street works notified as taking place in the footway was recorded, and photographs taken of the extent of encroachment on the carriageway wherever this occurred. This is reported on in Appendix 6 of this Volume.

**2.1.5** As preparation for this Report a brief questionnaire was sent to all highway authorities on their experience of operation of section 74, on their use of other sections within the Act relating to control of access to the highway (for instance by issuing a direction under section 56 of NRSWA to an undertaker as to when their street works may or may not be carried out), and on the amounts invoiced by them for overruns and the amounts agreed with the

undertakers for payment. The results of this questionnaire are reported in Appendix E of this Volume.

- 2.1.6** Our first Annual Report included a report on our investigation into the availability of information, if any, on the extent of authorities' highway works. It concluded that there is very little such data available, and what there was did not provide for a like for like comparison with the different categories of street works. We have developed a template for use by highway authorities for the collection of data on their road works which was described in our second Annual Report. This has been issued for testing to highway authorities in London but no reports are available up to the time of publication of this report.

## **2.2 Methodology**

- 2.2.1** The Methodology for the Study was approved by the Steering Group formed at the inception of the Study and is given in Appendix B to this Report. Indicators of the extent of street works and of the effectiveness of section 74 were selected and calculated using information contained in copies of the EToN notices supplied by selected highway authorities. The calculations are performed at monthly intervals for trend and exception analysis using computers to facilitate the processing of large volumes of data. A group of 25 representative sample authorities that were operating section 74 were selected from the following groups of authorities:

- 5 "inner" London Boroughs;
- 5 "outer" London Boroughs;
- 5 County Councils;
- 5 Metropolitan Boroughs;
- 5 Unitary Authorities.

- 2.2.2** All batches undergo a checking and validation procedure prior to submission for production of the indicators. The primary check is a consistency check to ensure that the number of batches of files received monthly from each authority is as expected. So far there appears to be general correspondence in the numbers of batches of data.

- 2.2.3** The sample authorities have also been requested to provide data on the amounts they have invoiced and the sums paid by the utilities. A spreadsheet template has been provided for this purpose as there is no mechanism for automatic calculation of invoice amounts within the EtoN system. This template supports the collection of financial information by individual works for consistency checking with the contents of EToN records.



**2.2.4** We now hold approximately 8 million copies of notices from the sample authorities, from 1<sup>st</sup> April 2001 to 31<sup>st</sup> March 2004 (Records for the period 1<sup>st</sup> April 2000 to 31<sup>st</sup> March 2001 have been supplied by the majority of the sample authorities but are not used as they do not contain explicit information for the evaluation of indicators). These contain a combination of text and numeric information arranged in formats that are defined within the EToN system (Section 1.2 above). We have developed programs to validate each notice and then transfer the information from the notice into a database – an information management mechanism that facilitates analysis and reporting on the indicators for the Study. The validation is performed as a two-stage process namely:

- (i) Check for conformity with the requirements of Appendix E of the Code of Practice for the Co-ordination of Street Works and Works for Road Purposes and Related Matters, Second Edition April 2001 (“the Co-ordination Code”);
- (ii) For notices relating to each works, a check for consistency and completeness e.g. a logical sequence of dates from estimated start date to completion.

Functions are available within the system to provide tables and charts on the outcomes from the validation process and on the trends in the indicators.

**2.2.5** The indicators have been extrapolated to all authorities in England to obtain an estimate of the levels of street works activity throughout England and the potential for reducing disruption through application of s74. The extrapolation is performed by applying the ratio of road lengths for all authorities in each of the 5 Groups (2.2.1 above) to those for the sample authorities in that Group to each indicator (Section 3.4.2 of the first Annual Report and Appendix F of this Report).

### **3. Extent of Street Works**

#### **3.1 Indicators of Extent of Street Works**

**3.1.1** This section deals with the trends in the indicators on the extent of street works that has been obtained from the copies of the notices. The indicators are as follows:

- (i) The numbers of days of works
- (ii) The number of works
- (iii) The number of excavations per month
- (iv) The area of works

**3.1.2** We have omitted all records prior to April 2001 from our analysis for reasons explained in our Second Annual Report. Prior to April 2001 notices were not prescribed for the recording of the actual start and finish dates of works so that the recording of these parameters, which are central to this Study, was arbitrary and dependent on the individual undertakers' systems. In view of this uncertainty it was agreed that these records should be excluded from further analysis.

**3.1.3** This is the third year of the Study, and the sample authorities have had stable mechanisms for the supply of batches to us since about January 2002 (Appendix C). We would also expect there to be an agreed general understanding of the purpose of section 74 and the associated regulations and Codes of Practice, and a bedding down of utilities' systems and working practices that should be reflected in the trends in the indicators. Our analysis focuses on the steady state values of indicators with comments on exceptions where they occur with possible reasons.

**3.1.4** We have used the same overall format for presentation of results as in the second Annual Report. Values for each indicator are presented in the form of a table of six-month averages together with a chart of monthly trends for each sector. Averaging over six months should account for seasonal variations and provide comparable values for each indicator by individual sector. The charts should provide visual evidence of stability for each sector and highlight discontinuities.

**3.1.5** So that monthly and six-monthly trends in the indicators can be determined, our analysis assigns each works to the month in which the actual start date occurs. This method has been found to support greater evenness in and identification of patterns of work.

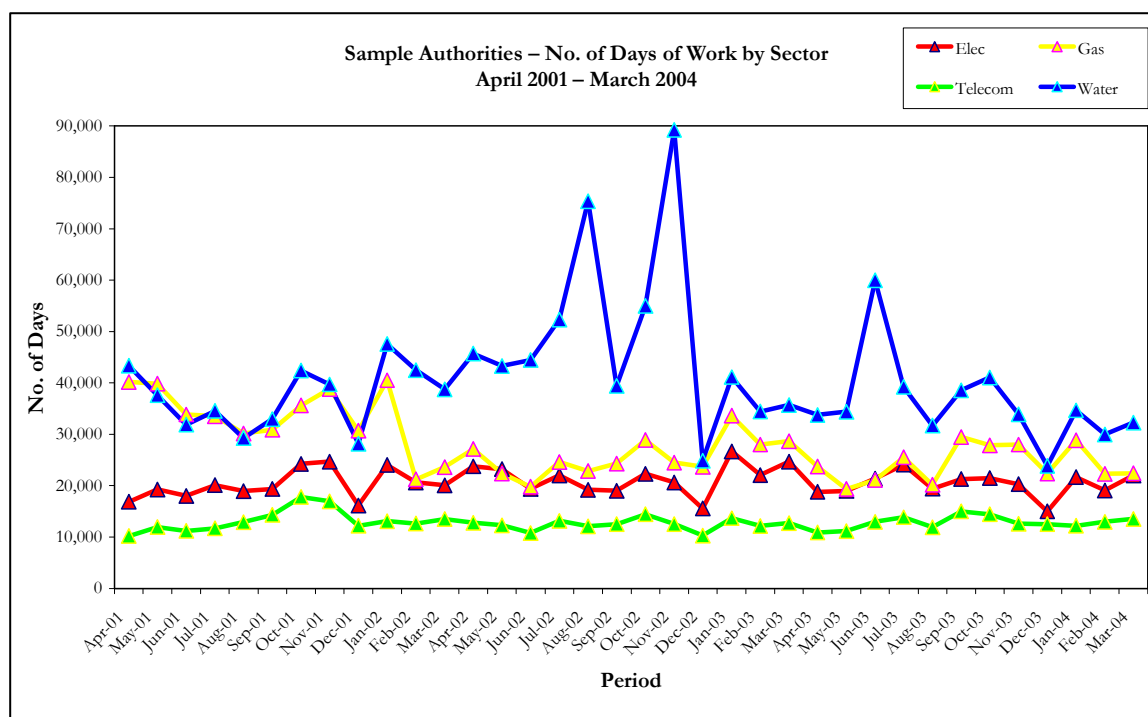
All charts will show a downturn for March 2004 as copies of all their notices for this month are not yet available from the sample authorities.

#### **3.2 Number of Days of Works – Sample Authorities**

**3.2.1** The summary table below contains a six-monthly average for the number of days of work per month by sector for the sample authorities. This provides an overall check on consistency of operations and their noticing for each sector. The accompanying chart shows the average number of days of work for each month by utility sector.

**Table 3.2.1.a– Average Number of Days of Works per Month by Sector – Sample Authorities**

Period	Elec	Gas	Telecom	Water	All
Apr 01-Sep 01	18,774	34,734	12,048	34,928	100,485
Oct 01 - Mar 02	21,635	31,738	14,369	39,845	107,586
Apr 02- Sep 02	21,108	23,519	12,281	50,092	107,000
Oct 02-Mar 03	21,993	27,902	12,657	46,720	109,273
Apr 03 - Sep 03	20,667	23,232	12,648	39,605	96,152
Oct 03-Mar 04	19,927	25,303	13,056	32,613	90,899
Overall Average	20,684	27,738	12,843	40,634	101,899



**3.2.2** The table shows generally consistent averages for the electricity and telecom sectors for the periods April 2002 – September 2002, October 2002 – March 2003, and April 2003 – October 2003. The chart shows that the water sector shows a significant increase in the number of days worked in August 2002 and November 2002, and a lesser peak in June 2003.

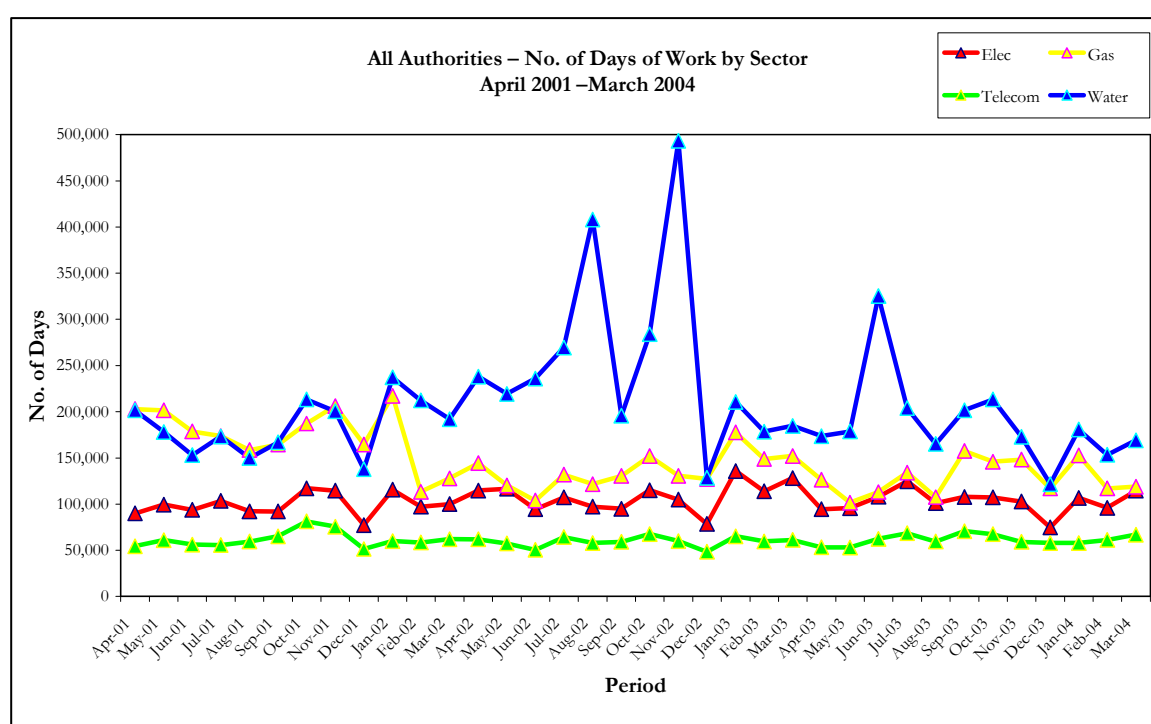
**3.2.3** There should be no reason for such a peak in activity in this sector. As our method assigns the number of days of work to the month in which the works started, the increase of 40,000 days may have been due to either a number of works starting in November 2002 and being completed many months later, in most cases in November 2003, or a very large increase in the number of works undertaken (more than double), or both. Further investigation revealed that one water company had issued notices of actual start of works in November 2002 for 187 works that were notified by the undertaker as standard works. The average duration for each of these works was 253 days each i.e. more than 47,000 days overall. The numbers of works (Para 3.4 below) in the water sector do not show a corresponding increase at this time. Further investigation with the authority confirmed that the undertaker was conducting CCTV surveys and simply continuously extending the proposed end date of these works with the authority's approval.

### 3.3 Number of Days of Work – All Authorities

3.3.1 The extrapolated equivalent number of days of work for all authorities is also shown below.

**Table 3.3.1.a– Average Number of Days of Work per Month by Sector – All Authorities**

Period	Elec	Gas	Telecom	Water	All
Apr 01-Sep 01	95,159	180,005	58,655	170,505	504,325
Oct 01 - Mar 02	103,573	169,387	64,762	198,824	536,546
Apr 02- Sep 02	104,225	125,408	58,511	261,131	549,274
Oct 02-Mar 03	112,734	148,096	60,353	246,593	567,776
Apr 03 - Sep 03	105,214	123,381	61,265	208,115	497,974
Oct 03-Mar 04	100,362	133,231	61,793	168,514	463,900
Overall Average	103,544	146,585	60,890	208,947	519,966



3.3.2 The pattern of activity in terms of number of days worked for all authorities closely resembles that for the sample authorities for all sectors. The number of days worked per month in the gas and electricity sectors is approximately equal, while the water sector carries out almost twice as many days of work per month as other sectors.

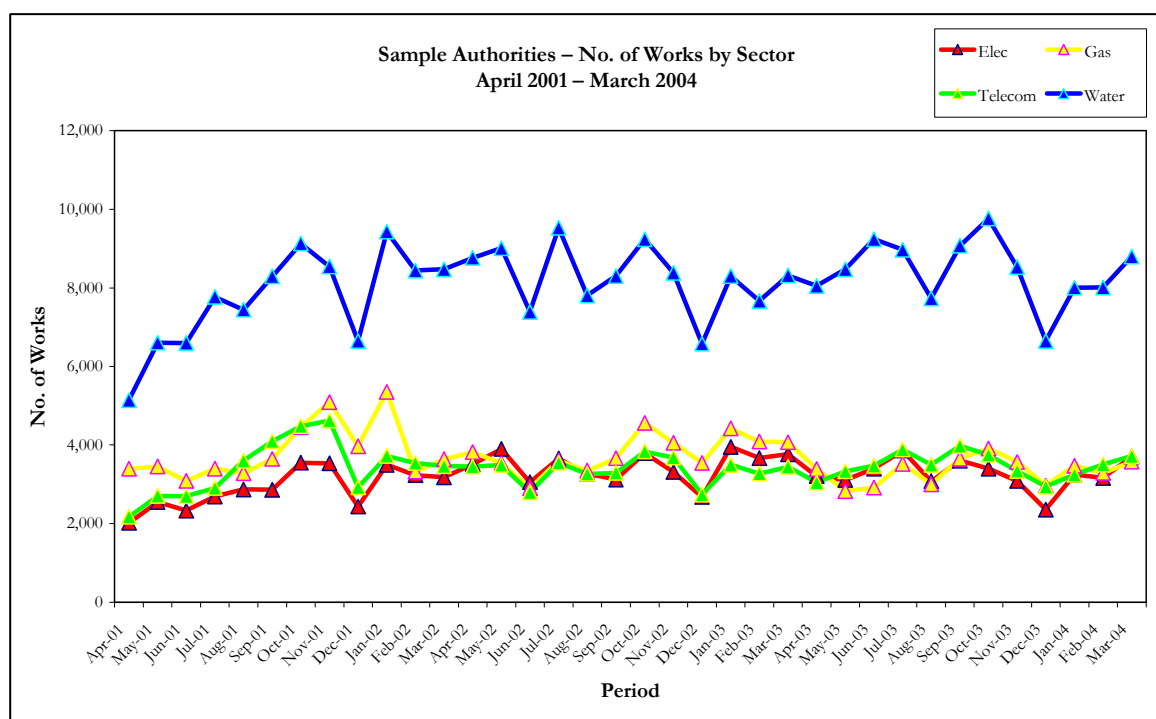
### 3.4 Number of Works per Month – Sample Authorities

3.4.1 The average number of works per month and average number of phases of work per month by sector are given below. The term “phase” has been introduced to explain the occurrence of works whose progress has been interrupted by one or more “works clear” notices followed by a notice that includes a fresh start date. In some sectors there is more than one phase associated with each works.

**Table 3.4.1.a– Number of Works and Phases per month by Sector – Sample Authorities**

Period	Elec		Gas		Telecom		Water		All	
	Works	Phases	Works	Phases	Works	Phases	Works	Phases	Works	Phases
Apr 01 - Sep 01	2,554	2,565	3,376	3,394	3,028	3,401	6,973	9,046	15,930	18,407
Oct 01-Mar 02	3,237	3,274	4,307	4,364	3,791	4,899	8,444	12,873	19,778	25,410
Apr 02-Sep 02	3,419	3,484	3,479	3,547	3,307	4,353	8,468	12,931	18,673	24,314
Oct 02-Mar 03	3,529	3,679	4,124	4,233	3,410	4,447	8,079	11,608	19,141	23,966
Apr 03-Sep 03	3,376	3,554	3,217	3,294	3,534	4,640	8,591	12,178	18,717	23,666
Oct 03-Mar 04	3,159	3,302	3,463	3,584	3,416	4,593	8,293	11,902	18,331	23,382
Overall Avg.	3,212	3,310	3,661	3,736	3,414	4,389	8,141	11,756	18,428	23,191

**3.4.2** The differences between phases and works is most marked in the water sector and further investigation has been carried out (3.6 below).



Again the chart shows close correspondence for the electricity, gas and telecom sectors in number of works per month. There is reduced activity in December 2002 and December 2003 (Christmas vacation). The reduction in the number of works in June 2003 corresponds with the peak in the number of days of works (3.3. above). Further investigation revealed that the notices from one water company indicated that it was carrying out major works over a longer period.

### 3.5 Number of Works per Month – All Authorities

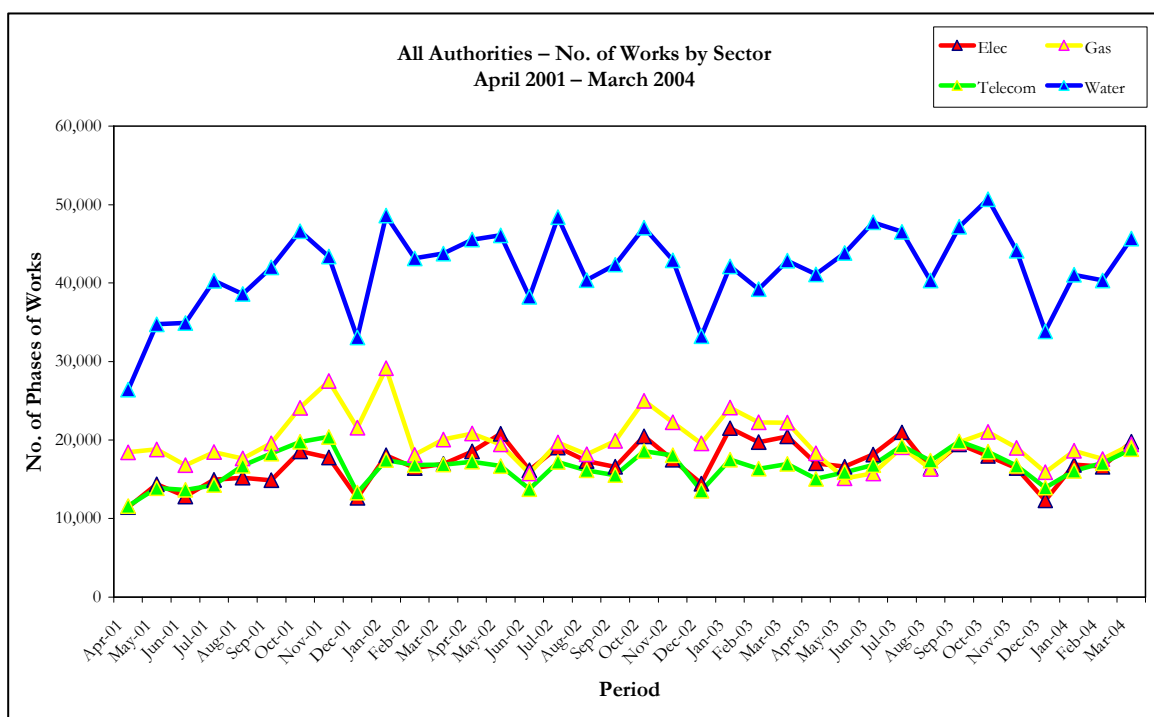
3.5.1 The extrapolated numbers of works per month for all authorities is given in summary form in the table below while the chart shows the trend on a monthly basis.

**Table 3.5.1.a – Average Number of Works and Phases per Month by Sector – All Authorities**

Period	Elec		Gas		Telecom		Water		All	
	Works	Phases	Works	Phases	Works	Phases	Works	Phases	Works	Phases
Apr 01 - Sep 01	14,000	14,000	18,300	18,400	14,700	16,400	36,200	45,400	83,100	94,200
Oct 01-Mar 02	16,800	17,000	23,400	23,800	17,400	22,200	43,100	60,400	100,700	123,300
Apr 02-Sep 02	18,100	18,400	19,000	19,300	16,100	20,600	43,500	61,600	96,600	120,000
Oct 02-Mar 03	19,000	19,800	22,600	23,200	16,800	21,500	41,200	56,500	99,700	121,000
Apr 03-Sep 03	18,100	19,000	17,400	17,800	17,400	22,300	44,500	59,700	97,300	118,800
Oct 03-Mar 04	16,700	17,400	18,600	19,300	16,900	22,100	42,600	58,600	94,700	117,300
Overall Avg.	17,100	17,600	19,900	20,300	16,600	20,800	41,800	57,000	95,400	115,800

The extrapolated figures for all sectors reflect those for the sample authorities.

### 3.6 Total Number of Works



**3.6.1** The table below gives the total number of works in each six-month period from April 2001 to March 2004 for all authorities. This is extrapolated from the information provided in the notices for 25 sample authorities.

**Table 3.6.1.a – Total Number of Works for Six Month Period by Sector –for All Authorities**

Period	Elec		Gas		Telecom		Water		All	
	Works	Phases	Works	Phases	Works	Phases	Works	Phases	Works	Phases
Apr 01 - Sep 01	83,700	84,000	109,700	110,400	88,400	98,500	217,000	272,100	498,800	565,000
Oct 01-Mar 02	100,500	101,700	140,500	142,500	104,600	132,900	258,500	362,600	604,100	739,700
Apr 02-Sep 02	108,500	110,600	113,800	116,000	96,500	123,700	261,000	369,700	579,800	720,000
Oct 02-Mar 03	114,100	119,000	135,400	139,200	101,000	128,800	247,400	339,000	597,900	726,000
Apr 03-Sep 03	108,700	114,000	104,300	107,000	104,200	133,900	266,700	358,100	583,900	713,000
Oct 03-Mar 04	99,900	104,500	111,600	115,800	101,100	132,400	255,700	351,300	568,300	704,000
Overall Avg.	615,400	633,800	715,300	730,900	595,800	750,200	1,506,300	2,052,800	3,432,800	4,167,700

**3.6.2** From the above statistics the number of works carried out in a 12 – month period has been calculated from the above table for the months October 2001 to September 2002 and again from April 2002 – March 2003. (We have not selected the year April 2003 – March 2004 as some utilities' works e.g. major works, that commenced in or just before March 2004 may still be open for several months and would not be counted.)

**The number of works in each 12 month periods from October 2001 to March 2004 is estimated as just under 1.2 million.**

**The ratio of number of phases to number of works is most marked in the water sector and shows a reducing trend as follows:**

**April 2002 – September 2002                      1.42**

**October 2002 – March 2003** 1.37

**April 2003 – September 2003** 1.34

**October 2003 – March 2004** 1.37

We believe that the above can be approximated by considering the number of notices received from the sample authorities, and our record of this count is shown below. From the monthly records received we believe that the number of works should be about 17,000 per month for the sample authorities with the exception of December (Table in 3.4.1 above).

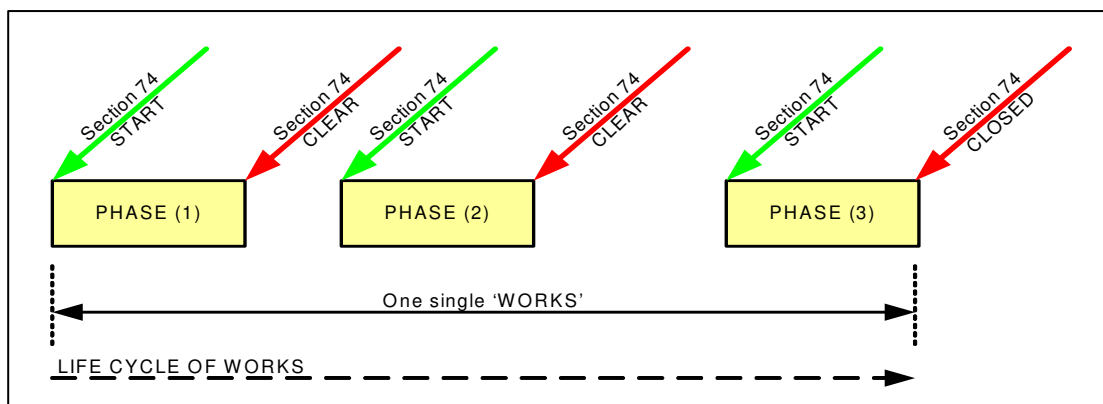
**Table 3.6.2.a– Record of Number of Notices received per Sample Authority**

Authority	May-03	Jun-03	Jul-03	Aug-03	Sep-03	Oct-03	Nov-03	Dec-03	Jan-04	Feb-04	Mar-04	Apr-04
BarkingDagenham	1,058	1,128	1,334	746	1,031	1,138	1,050	1,102	1,333	1,377	1,523	1,301
BathNESomerset	1,464	1,620	1,725	1,261	1,678	1,913	1,687	1,493	1,685	1,545	1,785	0
Bexley	2,589	2,565	1,937	2,101	2,617	2,733	2,237	2,318	2,657	2,298	2,439	2,754
BristolCity	2,903	3,187	3,574	2,490	3,012	3,218	3,082	2,804	3,131	3,220	3,517	2,850
Bromley	4,860	5,226	5,064	4,605	5,451	5,363	5,134	5,246	5,014	5,556	6,295	2,525
Coventry	1,583	1,773	1,710	1,606	1,936	1,720	1,483	1,670	1,765	1,821	2,359	1,595
Croydon	3,993	3,570	5,069	4,266	5,091	4,844	4,415	4,812	22	5,446	0	0
DerbyCity	404	482	1,426	1,274	1,539	1,520	1,527	1,326	1,334	1,428	1,234	1,200
Devon	9,836	10,043	10,388	8,095	8,639	8,619	7,575	7,461	8,364	7,652	8,801	7,541
Doncaster	1,713	1,150	4,079	1,105	1,883	2,392	1,981	2,246	1,999	2,171	2,787	2,311
EastSussex	4,554	5,946	6,179	5,336	5,781	6,656	5,709	5,780	5,992	5,974	6,579	6,622
Gloucestershire	4,923	5,024	5,617	5,126	5,534	6,206	5,270	5,616	6,203	5,680	6,511	5,420
Greenwich	2,322	2,238	2,284	2,012	2,495	3,281	2,662	2,503	2,794	3,251	2,884	2,586
HammersmithFulham	2,343	2,631	2,702	2,093	2,590	2,591	2,041	0	0	0	0	0
Harrow	1,466	1,479	1,416	1,223	1,651	1,790	1,682	1,609	1,929	1,758	1,983	1,671
KensingtonChelsea	3,178	3,438	568	2,660	2,790	3,310	2,789	2,806	3,005	2,420	4,107	3,224
Kirklees	3,371	3,554	3,949	3,207	3,831	4,726	4,226	3,204	3,703	3,975	4,887	4,420
LeedsCity	5,142	5,224	5,875	4,685	5,464	5,813	5,449	5,308	6,661	6,852	8,346	6,707
Newcastle	2,609	2,820	2,676	2,173	2,440	2,438	2,358	2,052	2,663	2,268	2,484	2,410
Newham	3,021	3,457	2,344	1,984	2,360	2,062	2,221	939	2,324	2,178	2,734	0
NorthYorkshire	5,070	4,963	5,358	4,499	4,853	5,442	5,481	5,029	6,254	6,563	7,906	6,227
NottinghamCity	2,191	2,038	2,600	2,242	2,245	2,490	2,079	0	0	0	0	0
Nottinghamshire	5,250	6,274	6,635	5,447	6,139	6,773	5,781	4,555	4,633	4,996	6,443	6,238
Westminster	5,199	5,245	6,285	5,337	5,006	5,862	5,536	4,256	4,969	5,445	6,321	5,063
YorkCity	1,473	1,408	1,612	1,121	1,323	1,163	83	392	165	315	1,531	1,400
<b>TOTAL</b>	<b>82,515</b>	<b>86,483</b>	<b>92,406</b>	<b>76,694</b>	<b>87,379</b>	<b>94,063</b>	<b>83,538</b>	<b>74,527</b>	<b>78,599</b>	<b>84,189</b>	<b>93,456</b>	<b>74,065</b>

### 3.7 Definition of Phases of Works

**3.7.1** In the Second Annual Report we defined a ‘phase’ of any street works as a discrete period of occupation of the highway relating to the same works. The works and phases will have a number of notifications relating to it such as advance notice, section 74 start, section 74 clear, section 74 closed, section 70(3) and registration. The section 74 start notice indicates when occupation of the highway commences at the start of the works and within any subsequent phase, the section 74 clear notice indicates the end of a phase, and the section 74 closed notice indicates when occupation has stopped. The diagram below illustrates this method of identification of phases.





**3.7.2** The Co-ordination Code recognises multi-phase works in respect of section 74 charging. They are referred to as ‘interrupted works’ and charging for overrunning is based on the individual works phases not the overall works. The correct identification of phases is also central to our reporting in the Study as measurement of occupation, overrun and underestimation of durations is based on phases.

### **3.8 Identification of Phases**

**3.8.1** The most common reason for the notification and execution of works in phases is the use of an interim reinstatement followed by a permanent reinstatement in a separate phase by the undertaker. However certain noticing practices that are permissible under the present version of the Code may result in apparent multiple phases even though occupation of the street has not occurred. For example, an undertaker raises a daily whereabouts notice (a notice of minor works with excavation in a non traffic sensitive street taking 3 days or less) in advance of some planned works, but the works do not commence as planned. The undertaker then issues a works clear notice to avoid potential overrun charges. The correct procedure would of course be to abandon the works and then issue a new daily whereabouts with a new works reference.

**Table 3.8.1.a – Phases per Works by Sector – Sample Authorities (rounded figures)**

Sector	Period	Number of Works with...						Ratio of Phases to Works
		1 Phase Only	2 Phases Only	3 Phases Only	4 Phases Only	5 Phases Only	> 5 Phases	
Elec	Apr 01 - Sep 01	15,000	210	11	1	0	0	1.00
	Oct 01 - Mar 02	19,000	520	36	2	0	1	1.03
	Apr 02 - Sep 02	20,000	610	37	6	1	0	1.03
	Oct 02 - Mar 03	20,000	1,200	63	10	3	0	1.06
	Apr 03 - Sep 03	20,000	860	34	15	2	0	1.05
	Oct 03 - Mar 04	19,000	580	36	6	2	0	1.03
Gas	Apr 01 - Sep 01	20,000	230	25	2	1	0	1.01
	Oct 01 - Mar 02	26,000	560	52	4	1	1	1.02
	Apr 02 - Sep 02	21,000	480	59	12	5	4	1.03
	Oct 02 - Mar 03	24,000	790	99	26	7	2	1.04
	Apr 03 - Sep 03	19,000	520	75	22	7	2	1.04
	Oct 03 - Mar 04	20,000	620	99	22	5	5	1.04
Telecom	Apr 01 - Sep 01	13,000	5,300	260	26	1	2	1.32
	Oct 01 - Mar 02	17,000	6,100	300	38	8	5	1.30
	Apr 02 - Sep 02	14,000	5,600	400	120	40	36	1.35
	Oct 02 - Mar 03	15,000	5,900	340	88	35	38	1.35
	Apr 03 - Sep 03	15,000	6,100	390	130	46	79	1.37
	Oct 03 - Mar 04	16,000	4,400	330	110	39	44	1.28
Water	Apr 01 - Sep 01	28,000	11,000	1,700	640	320	270	1.42
	Oct 01 - Mar 02	32,000	14,000	2,800	1,100	520	540	1.53
	Apr 02 - Sep 02	33,000	14,000	2,400	1,100	500	510	1.49
	Oct 02 - Mar 03	33,000	12,000	2,100	760	300	250	1.42
	Apr 03 - Sep 03	37,000	12,000	2,300	860	420	370	1.43
	Oct 03 - Mar 04	37,000	11,000	1,800	560	200	150	1.35

**3.8.2** The above table indicates that the number of works with more than one phase is small in comparison with the total number of works with one phase only. However, there is an increase in the trend towards their use that is particularly marked in the water sector.

**3.8.3** Since the use of interruptions to works is highest in the water sector, we have examined the notices sent to the sample authorities by their corresponding water utilities. One water utility is particularly responsible for the notification of interrupted works. The table below shows this.

**Table 3.8.3.a– a Water Utility – Number of Works and Phases**

Period	Number of Works with...						Ratio of Phases to Works
	1 Phase	2 Phases	3 Phases	4 Phases	5 Phases	> 5 Phases	
Apr 01 - Sep 01	3,497	4,929	1,308	542	283	235	2.08
Oct 01 - Mar 02	3,378	6,056	2,141	932	425	472	2.33
Apr 02 - Sep 02	4,029	5,525	1,678	859	424	416	2.21
Oct 02 - Mar 03	5,156	4,483	1,488	593	235	205	1.94
Apr 03 - Sep 03	4,556	4,118	1,671	720	349	300	2.09
Oct 03 – Mar 04	5,641	3,773	1,186	391	145	92	1.75

**3.8.4** The above table indicates that there were more works with two or more phases than with one phase. Up to September 2002 the number of works with two phases exceeded those with one phase, although this is not the case thereafter.

**3.8.5** The correct notification of phases has also been covered in our investigations into data quality (Appendix D). The criterion we use is that a conforming set of notices must apply to any phase i.e. completion of the current phase using a works clear or interim reinstatement notice followed by advance notification of the next phase through to either site clearance or closure.

### **3.9 Number of Works per Month by Utility Sector by Works Category – All Authorities**

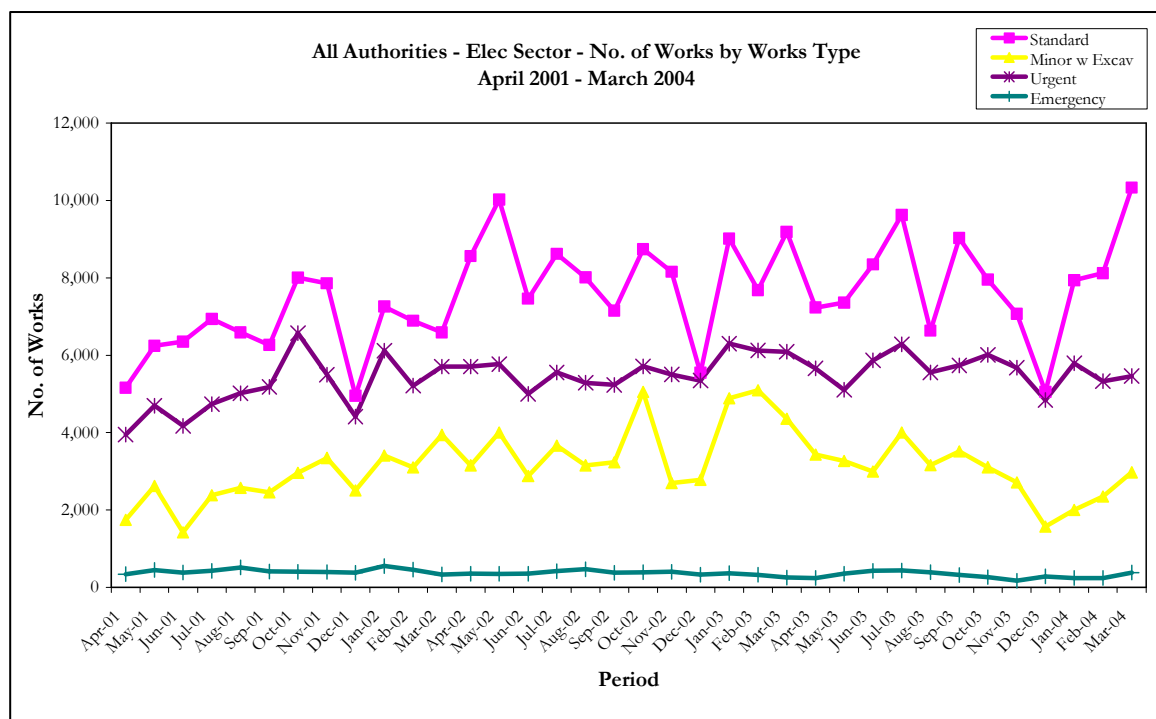
**3.9.1** We have analysed the number of works within each works category within each utility sector in order to identify the most common categories. The selection of works categories is part of the utilities' standards and procedures and may be allocated as a result of the nature of the work being undertaken. Our findings are given below.

**3.9.2** Works categories for the **electricity** sector are as follows. Note that in each chart the trend in the most commonly used categories has been plotted. Tables show monthly averages.

**Table 3.9.2.a– Electricity Sector – Number of Works per Month for All Authorities**

Period	Major	Standard	Minor w Excav	Minor w/out Excav	Urgent	Special Urgent	Emerg- ency	Total
Apr01 – Sep01	251	9,181	1,684	107	411	3	6,655	18,292
Oct01 – Mar02	325	10,194	1,280	38	601	0	10,982	23,419
Apr02 – Sep02	430	9,625	1,164	15	439	0	7,291	18,963
Oct02 – Mar03	332	9,768	944	6	560	1	10,963	22,573
Apr03 – Sep03	388	9,337	636	9	446	0	6,571	17,387
Oct03 – Mar04	360	8,274	881	3	260	2	8,817	18,596

The chart of trends for this sector is given below.

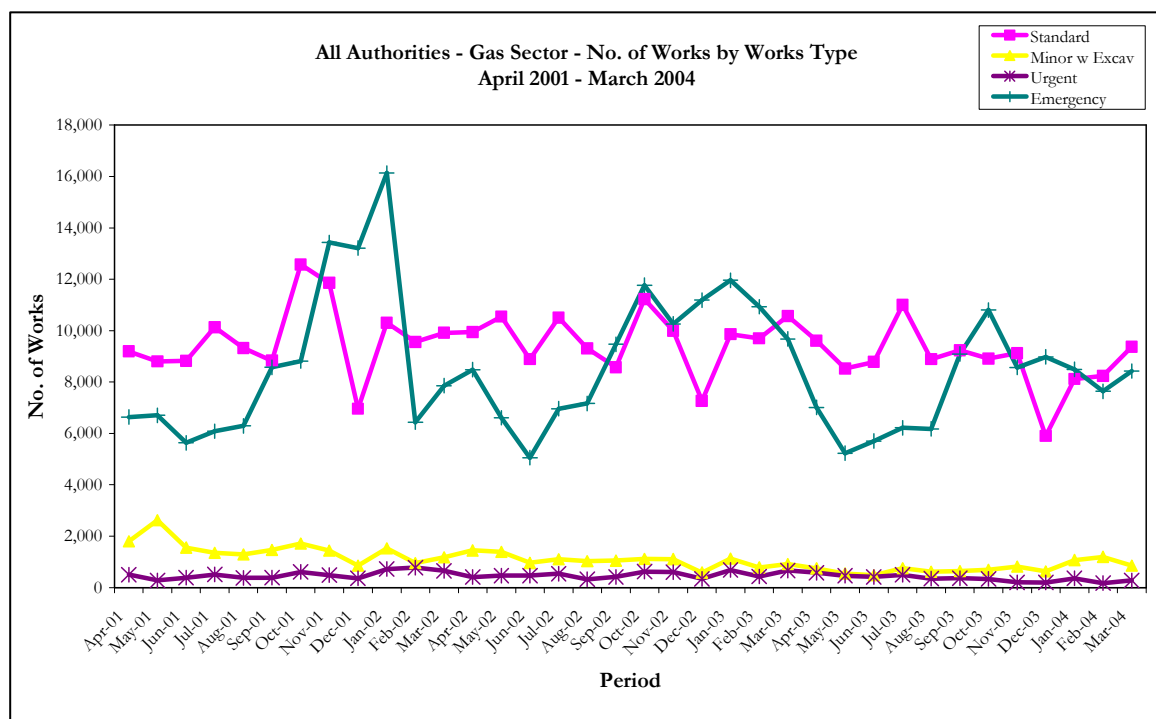


3.9.3 The number of works for each category in the **gas** sector is summarised as follows.

**Table 3.9.3.a– GasSector – Number of Works per Month for All Authorities**

Period	Major	Standard	Minor w Excav	Minor w/out Excav	Urgent	Special Urgent	Emerg- ency	Total
Apr01 – Sep01	251	9,181	1,684	107	411	3	6,655	18,292
Oct01 – Mar02	325	10,194	1,280	38	601	0	10,982	23,419
Apr02 – Sep02	430	9,625	1,164	15	439	0	7,291	18,963
Oct02 – Mar03	332	9,768	944	6	560	1	10,963	22,573
Apr03 – Sep03	388	9,337	636	9	446	0	6,571	17,387
Oct03 – Mar04	360	8,274	881	3	260	2	8,817	18,596

The chart of trends for this sector is given below.

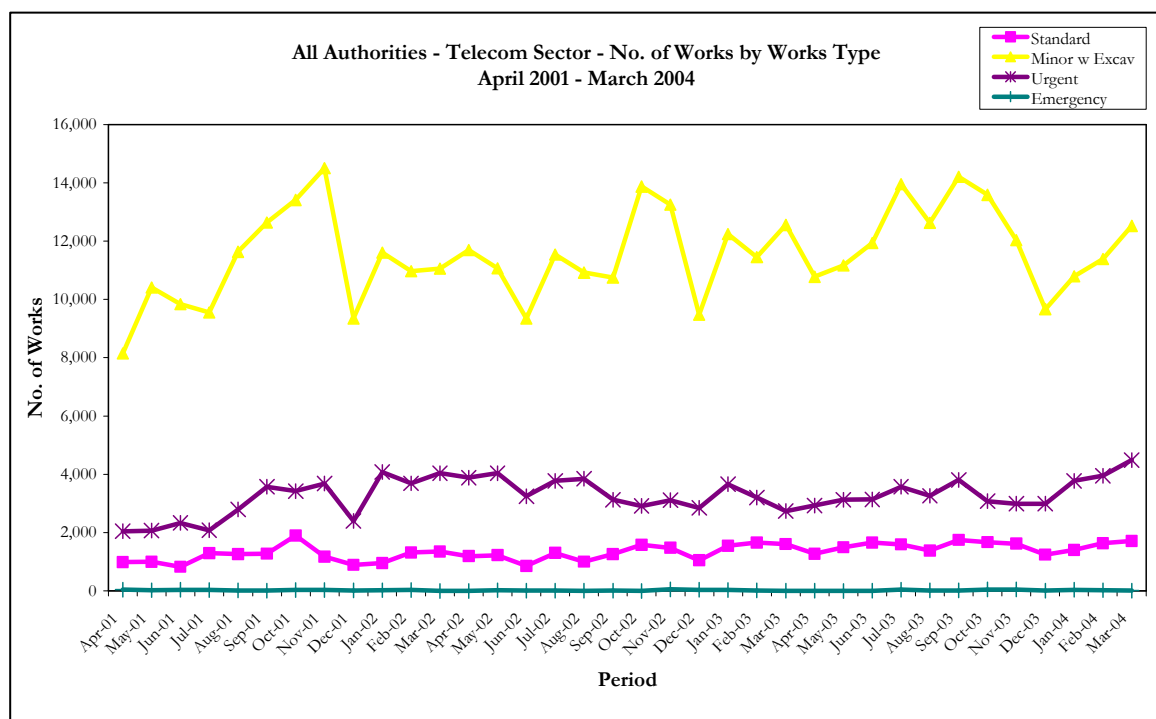


3.9.4 Works categories for the **telecom** sector are as follows.

**Table 3.9.4.a– Telecom Sector – Number of Works per Month for All Authorities**

Period	Major	Standard	Minor w Excav	Minor w/out Excav	Urgent	Special Urgent	Emerg- ency	Total
Apr01 – Sep01	187	1,111	10,371	146	2,485	408	29	14,735
Oct01 – Mar02	132	1,266	11,815	82	3,553	560	24	17,432
Apr02 – Sep02	41	1,143	10,885	87	3,654	266	12	16,087
Oct02 – Mar03	19	1,488	12,142	47	3,079	31	26	16,832
Apr03 – Sep03	52	1,528	12,443	15	3,309	6	16	17,368
Oct03 – Mar04	39	1,550	11,665	13	3,547	7	33	16,852

The chart of trends for this sector is given below.

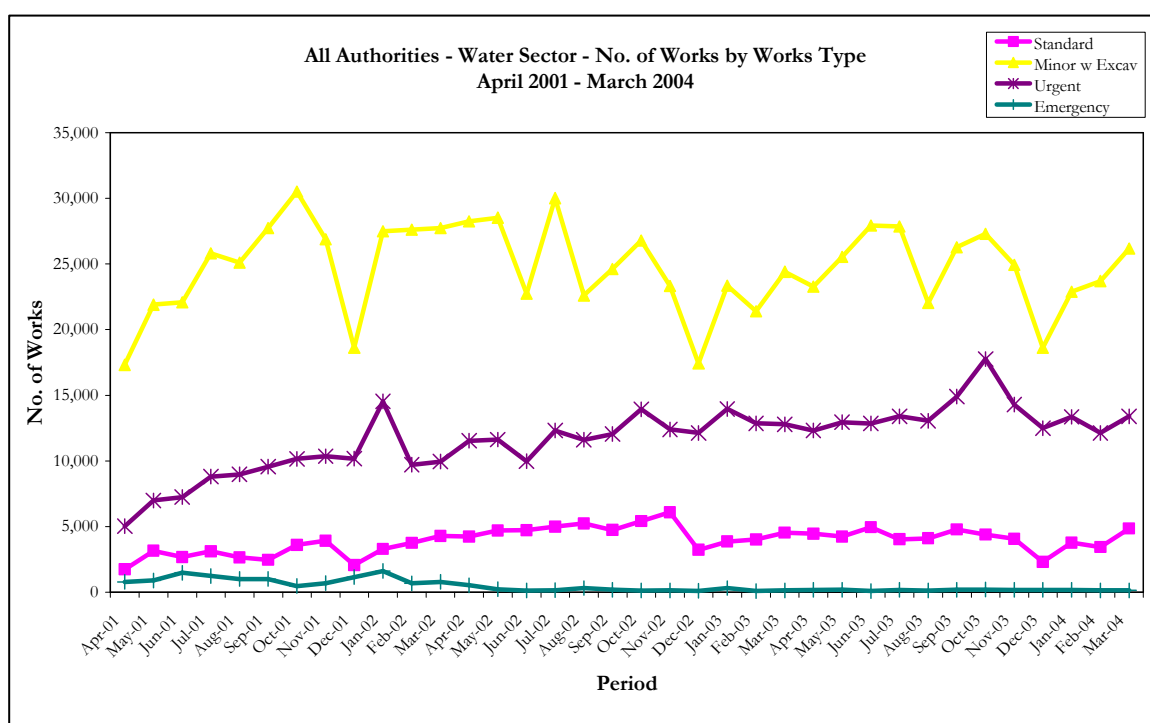


**3.9.5** The distribution of works types within the **water** sector is as follows.

**Table 3.9.5.a– Water Sector – Number of Works per Month for All Authorities**

Period	Major	Standard	Minor w Excav	Minor w/out Excav	Urgent	Special Urgent	Emerg- ency	Total
Apr01 – Sep01	946	2,635	23,326	178	7,768	242	1,069	36,164
Oct01 – Mar02	938	3,488	26,478	274	10,816	199	899	43,091
Apr02 – Sep02	676	4,770	26,122	115	11,517	36	260	43,496
Oct02 – Mar03	684	4,529	22,779	59	13,018	9	157	41,235
Apr03 – Sep03	1,035	4,427	25,487	91	13,248	5	160	44,453
Oct03 – Mar04	696	3,805	23,934	101	13,910	12	167	42,624

The chart corresponding to the trend in the most common works types is as follows



**3.9.6** The data behind the above charts has been analysed to understand why the curves for some work types are relatively smooth whereas others show much greater variation, and we have discussed this with representatives of the utilities.

**3.9.7** The activities of the utilities fall into three categories namely customer connections, faults and programmed works. Within each utility sector, these are matched to street works types as follows:

Sector	Utilities' Works Categories	Utilities' Street Works Categories Most Commonly Used	Shape of the Curve
Electricity	Faults	Urgent, Emergency	Flat, consistent
	Customer Connections	Mainly standard, some minor	Highly variable
	Programmed Works	Standard	Highly variable
Gas	Faults	Urgent, emergency	Emergency is highly variable, urgent more consistent
	Customer Connections	Standard, minor	Highly variable
	Programmed Works	Standard	Variable
Telecom	Faults	Urgent, emergency	Flat and consistent
	Customer Connections	Minor	Highly variable
	Programmed Works	Standard	Flat and consistent – probably reflects the current level of demand
Water	Faults	Urgent, emergency	Consistent
	Customer Connections	Minor	Highly variable
	Programmed Works	Standard	consistent

In three sectors customer connections, which are demand driven and are therefore highly variable, are classified as minor or standard works. In the gas sector it is emergency works that are causing the fluctuations.



### 3.10 Number of Works with Excavations – Sample Authorities

**3.10.1** In our Second Annual Report it was explained that the information in the notices could not be used directly to estimate this indicator, because Appendix E of the Co-ordination Code prescribes that individual notifications are required for openings in the carriageway, cycleway, footway or verge. Openings notified in this way would be counted incorrectly as separate excavations.

**3.10.2** We have used instead the following definition:

“the number of streets within individual works that contain excavations”.

Using this definition, multiple sites on the same street within the same works are only counted once. Transverse trenches are counted correctly as one excavation whereas openings at different locations in the same street should be counted individually but are counted only once. To assess the extent of the underestimation we have checked the number of streets with more than one site. The results are summarised in the table below.

**Table 310.2.a**

Period	One site	Two Sites	Three Sites	Four Sites	Five + Sites
Apr 01 - Sep 01	77%	13%	4.6%	1.8%	0.1%
Oct 01 - Mar 02	76%	14%	4.9%	1.8%	0.1%
Apr 02 - Sep 02	76%	14%	4.8%	1.9%	0.1%
Oct 02 - Mar 03	74%	15%	5.2%	2.2%	0.1%
Apr 03 - Sep 03	75%	15%	4.9%	2.0%	0.1%
Oct 03 - Mar 04	74%	15%	5.0%	2.1%	0.1%

i.e. up to 77% of streets have only one site, with a potential underestimate of 23% if a street with more than one site is counted only once.

**3.10.3** We have also checked the number of registration notices that do not contain dimensions with the following results:

#### **April 2001 – Present – Percentage of Registration Notices With No Dimensions – Sample Authorities**

- Electricity Sector ..... 8.5% down to less than 1%
- Gas Sector ..... 2.0% down to about 0.5%
- Telecom ..... 3.5% up to a current peak of 10%
- Water..... 3.7% down to about 0.5%

This shows a significant reduction overall since early days (apart from a recent blip in the telecoms sector) and we feel that potential underestimates from reinstatement notices without dimensions should be ignored.

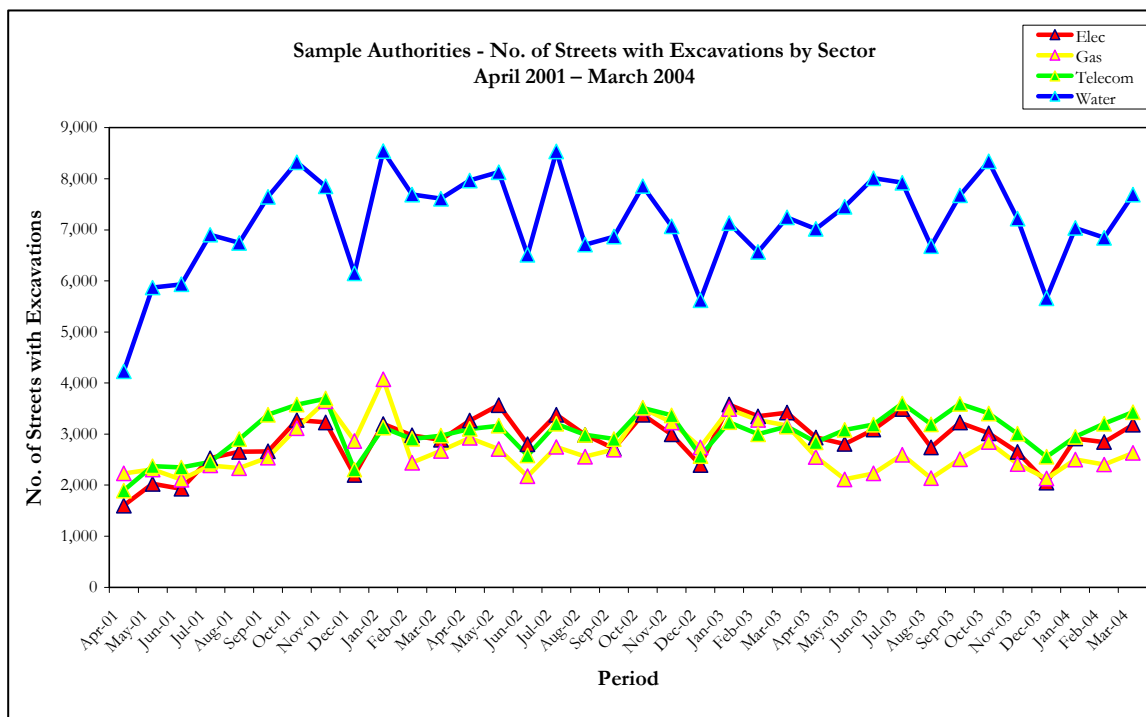
**3.10.4** The number of streets with excavations by sector is given below for the sample authorities. The figures are the monthly average in each six-month period commencing April 2001.

**Table 3.10.4.a– Number of Streets with Excavations per Month – Six-month Average**

Period	Elec	Gas	Telecom	Water	All
Apr 01-Sep 01	2,200	2,300	2,600	6,200	13,300
Oct 01 - Mar 02	3,000	3,100	3,100	7,700	16,900
Apr 02- Sep 02	3,100	2,600	3,000	7,500	16,200
Oct 02-Mar 03	3,200	3,200	3,100	6,900	16,500
Apr 03-Sep 03	3,000	2,400	3,200	7,500	16,100
Oct 03-Mar 04	2,800	2,500	3,100	7,100	15,500
Overall Average	2,900	2,700	3,000	7,100	15,800

**Table 3.10.4.b – Number of Works per Month – Six Month Average**

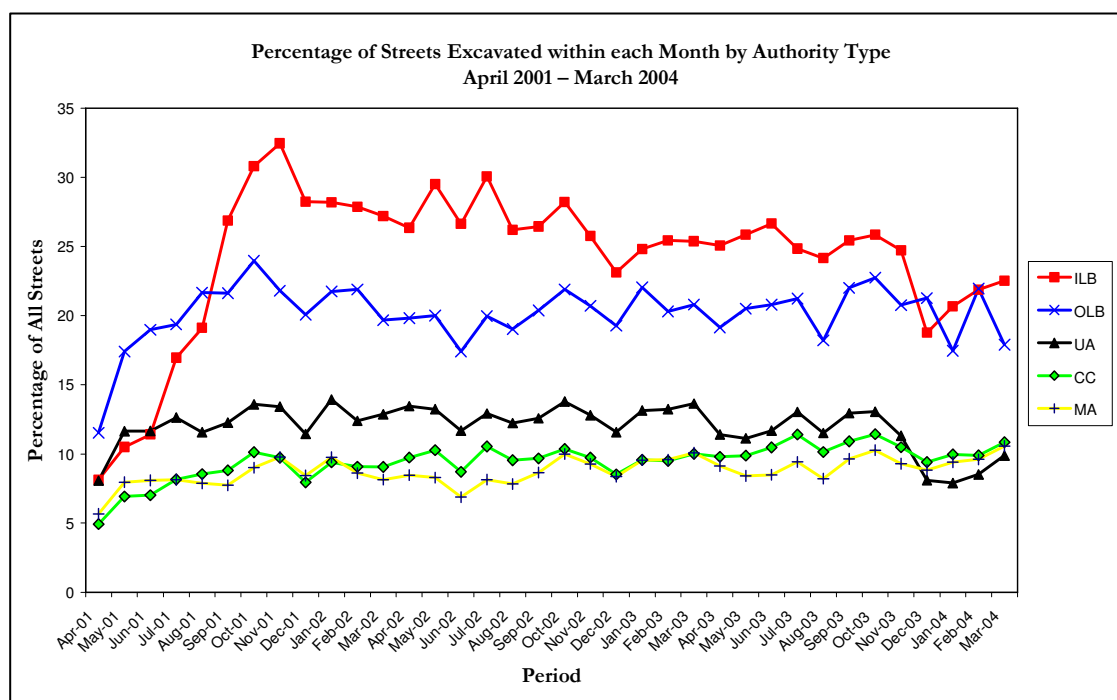
Period	Elec	Gas	Telecom	Water	All
Apr 01-Sep 01	2,554	3,376	3,028	6,973	15,930
Oct 01 - Mar 02	3,237	4,307	3,791	8,444	19,778
Apr 02- Sep 02	3,419	3,479	3,307	8,468	18,673
Oct 02-Mar 03	3,529	4,124	3,410	8,079	19,141
Apr 03-Sep 03	3,376	3,217	3,534	8,591	18,717
Oct 03-Mar 04	3,159	3,463	3,416	8,293	18,331
Overall Average	3,212	3,661	3,414	8,141	18,428



The pattern mirrors that for the number of works with the water sector undertaking more than twice the number of excavations as every other sector. For all sectors except water the distribution of excavations per month appears to be similar.

After January 2002 the pattern of excavations within each sector is the same as for the number of works undertaken each month (Section 3.4.2 and Chart above) which suggests consistency in the indicators. We would expect the number of works per month to be greater than the number of streets with excavation because some of the works undertaken are minor without excavation.

- 3.10.5** Excavations cause disruption and an assessment of potential problems in different areas of the country can be assessed by examining the concentration of excavations within different highway authority areas. The chart below shows the percentage of streets with excavations month by month. Each curve represents a different highway authority area.



The legends are:

ILB – Inner London Boroughs (red)

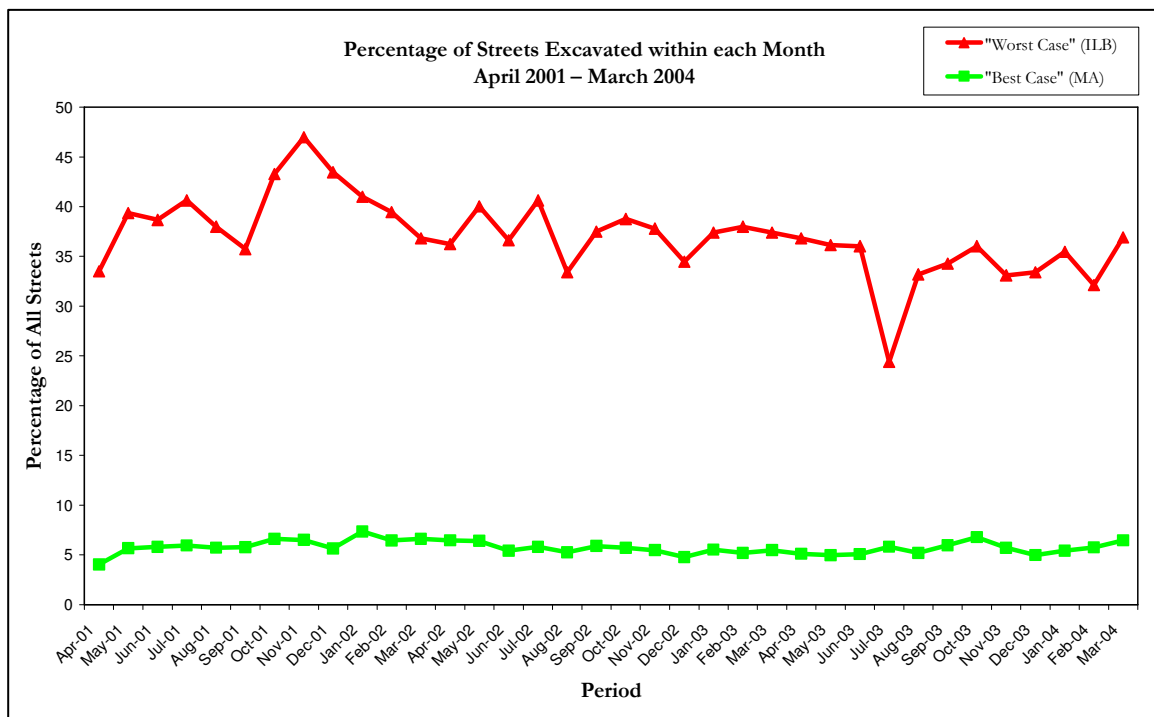
OLB - Outer London Boroughs (blue)

UA – New Unitary Authorities (black)

CC – County Councils (green)

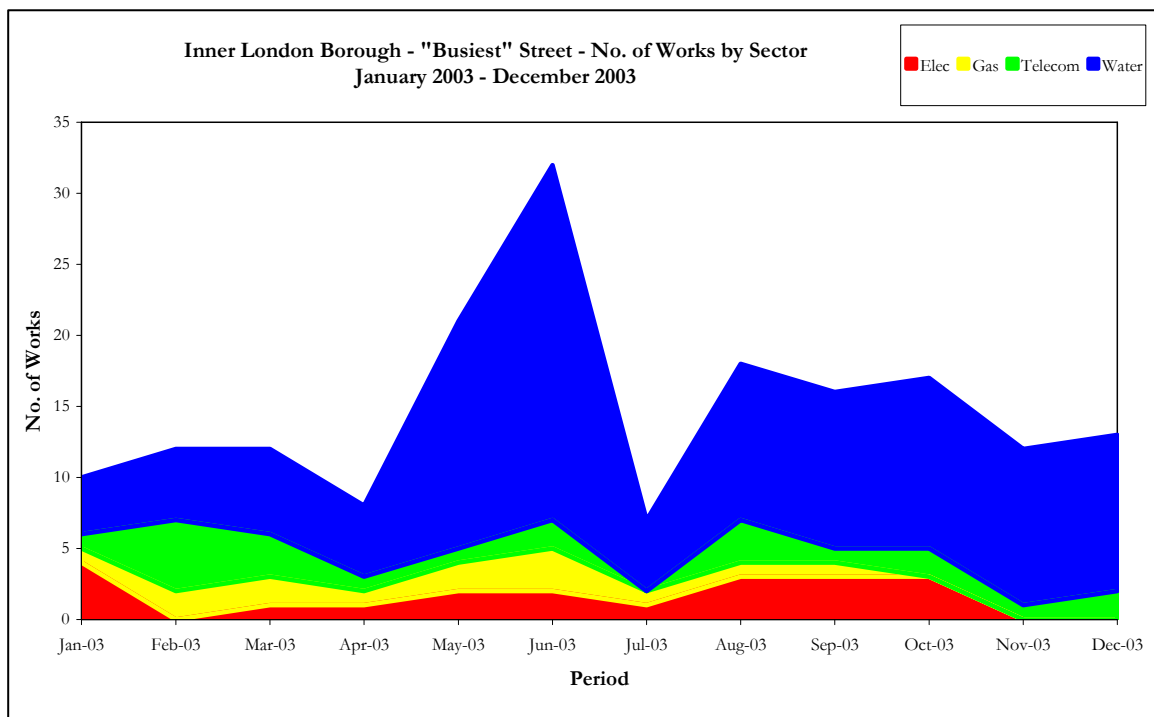
MA – Metropolitan Authorities (yellow)

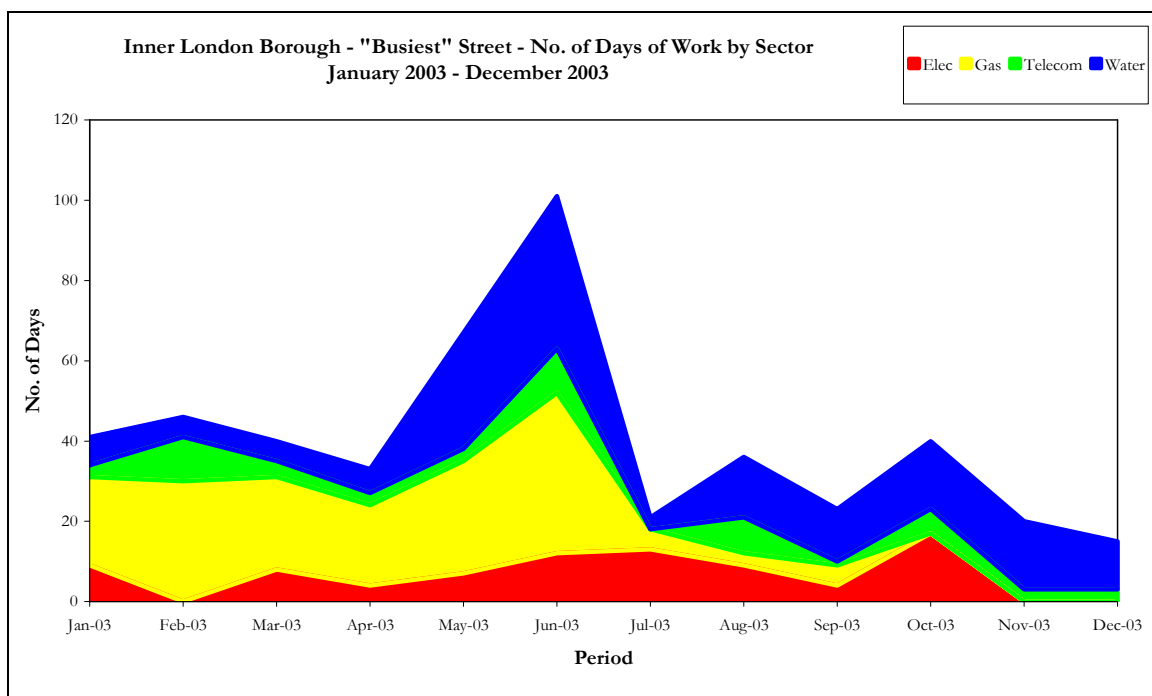
This chart is developed from data supplied by the sample authorities and shows a considerable difference between Inner London Boroughs and the rest of the sample authorities including Outer London Boroughs with up to 33% of streets excavated in any month. The situation is more acute for the worst case i.e. the highway authority with the greatest percentage of streets excavated and that with the corresponding smallest number (chart below).



The dip in number of excavations for the Inner London highway authority should be ignored as that authority lost most of its records in July 2003. Nevertheless, it shows that at least 32% and up to 45% of streets are opened in any one month by the utilities' activities.

**3.10.6** The busiest street among the sample authorities (Ladbroke Grove) has also been found. For this street the number of works and days worked per month are included in chart form below for each sector. The data is displayed for January 2003 to December 2003.





The road is a major North South route within the Borough with acceptable traffic flows but is operating at or above capacity. Street works would be likely to cause significant disruption.

Following detailed examination of some of the notices relating to works on this street we have found that the high incidence may be exaggerated slightly because of the use of "Clear" notices to postpone "Whereabouts" starts. There also appears to be a practise of the submission of multiple "works clear" notices by the utility in order to prevent it from incurring section 74 charges.

### 3.11 Average Area of Works

3.11.1 The following restrictions have been applied in calculating the average area of works:

- (i) Sites that are abandoned are not included
- (ii) To eliminate errors arising from the use of dimensions that have been entered in millimetres, we have not considered any sites where the width is >10m on the registration notice

The average area of works for sample authorities is given in the table below for each 6-monthly period commencing April 2001 by sector.

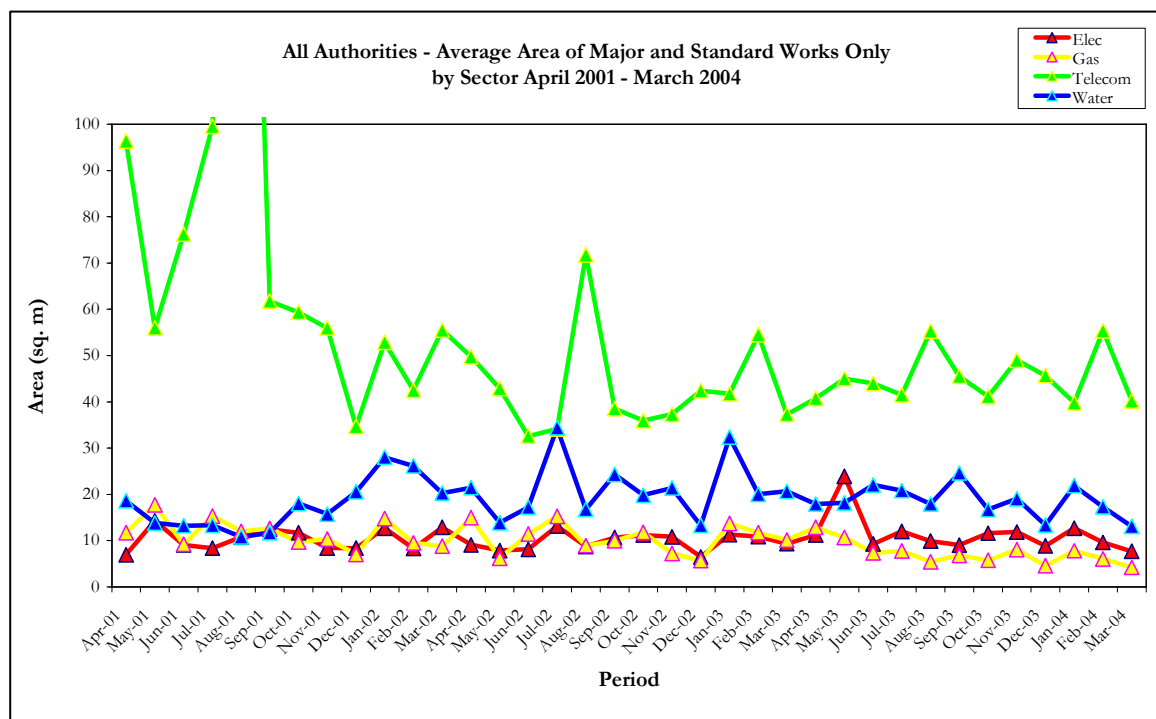
**Table 3.11.1.a– Average Area of Works (sq m) by Sector**

Period	Elec	Gas	Telecom	Water	All
Apr 01-Sep 01	7.17	7.25	10.87	3.00	5.91
Oct 01 - Mar 02	6.94	5.80	6.98	3.88	5.32
Apr 02- Sep 02	6.80	6.77	6.06	3.91	5.33
Oct 02-Mar 03	7.10	5.70	6.01	4.30	5.44
Apr 03-Sep 03	8.32	5.61	7.29	3.87	5.63
Oct 03-Mar 04	7.44	3.82	6.69	3.29	4.77

Since it is likely that the majority of significant excavations would be as a result of major and standard works, we have calculated values for the average area of works for these two categories only. The table and chart are provided below.

**Table 3.11.1.b– Major and Standard Works - Average Area of (sq m) by Sector**

Period	Elec	Gas	Telecom	Water	All
Apr-01-Sep-01	10.4	13.1	109.7	13.5	18.0
Oct-01-Mar-02	10.4	10.2	51.9	21.3	15.0
Apr-02-Sep-02	9.6	11.2	44.4	21.4	14.4
Oct-02-Mar-03	10.2	10.3	41.6	21.4	14.5
Apr 03-Sep 03	12.4	8.5	45.2	20.4	15.1
Oct-03-Mar-04	10.3	6.1	45.2	17.0	13.1



For these two works types the telecom sector has the largest average area of works, possibly as a result of the length of the trenches excavated. There appears to be little difference between the other sectors in terms of trend after January 2002, and the overall pattern of activity is the same for all sectors.

### 3.12 Extent of Works – Overall Conclusion

*Our findings endorse those reported in our Second Annual Report, namely that the trends in the indicators of extent appear to show similar patterns across all sectors. The undertakers may be carrying out their works in similar patterns of activity, although the extent of their works may be different. Further investigation of the number of openings indicates that the number of openings (expressed as a percentage of the number of streets) is greatest in Inner London with one Borough showing up to 55% of its streets being opened in any one month.*

## **4. Effectiveness of Section 74 in Reducing Unnecessary Disruption from Street Works**

### **4.1 Indicators of Effectiveness**

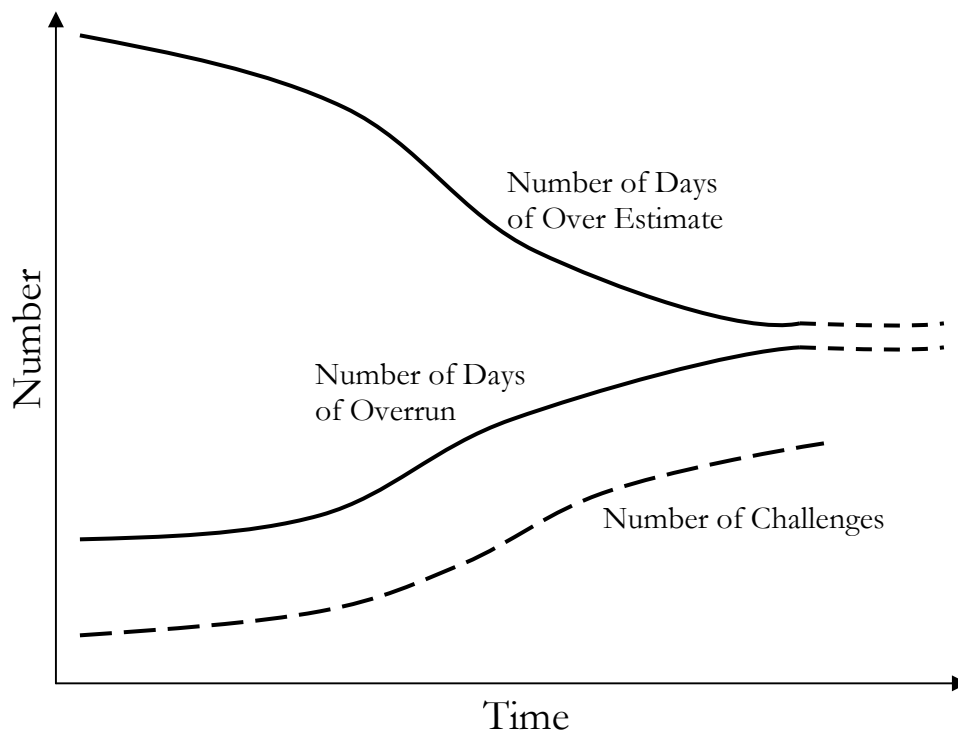
**4.1.1** Three indicators of the effectiveness of section 74 have been agreed. These are the trends in the following:

- (i) the duration of street works;
- (ii) the number of overruns on their estimates by the undertakers;
- (iii) the number of times that the utilities' actual durations are lower than their estimates.

**4.1.2** The effectiveness of section 74 is dependent on the approach of the highway authority in applying the legislation proactively. An undertaker may propose a reasonable period for the works that in its view is sufficient to complete the work and avoid any section 74 charges. An authority operating the Section 74 scheme will seek to ensure that the undertaker completes the works in the shortest possible time by challenging that estimate wherever the authority thinks that such a challenge is justified. Under continuous challenging estimates should reduce to a level close to the average actual duration for a particular type of works. The authority should also challenge re-estimating by the undertaker to discourage as far as possible any trend towards increasing and then beating estimates made generous by re-estimates.

**4.1.3** Our analysis has therefore included reports on the undertakers' estimates, including re-estimates while works are in progress, as well as reports on the extent of the undertakers' overrun of street works. As described in the Second Annual Report, the trend in both should be as shown in the diagram below. As part of the investigation we have reviewed the number of challenges, using both copies of the information in the notices from the utilities and responses to our third questionnaires to the authorities and the utilities.





## 4.2 Average Duration of Works

4.2.1 The average duration of works in each month within each sector in each 6-month period commencing April 2001 is given in the table below.

**Table 4.2.1.a – Average Duration of Works per Month (Days) – All Authorities**

Average per Month for Period	Elec	Gas	Telecom	Water	All
Apr-01-Sep-01	7	10	4	5	6
Oct-01-Mar-02	6	7	4	5	5
Apr-02-Sep-02	6	7	4	6	6
Oct-02-Mar-03	6	7	4	6	6
Apr 03-Sep 03	6	7	4	5	5
Oct-03-Mar-04	6	7	4	4	5

- 4.2.2 For the electricity sector the average duration for each of the most common works categories is as follows.

**Table 4.2.2.a – Electricity Sector – Average Duration of Works (Days) – All Authorities**

Avg Duration for Period	Standard	Minor with Excav	Urgent	Emergency
Apr 01 - Sep 01	8	3	7	7
Oct 01 - Mar 02	8	3	6	6
Apr 02 - Sep 02	7	3	6	6
Oct 02 - Mar 03	7	3	6	6
Apr 03 - Sep 03	7	3	6	6
Oct 03 - Mar 04	7	3	6	6

- 4.2.3 For the gas sector the average duration for each of the most common works categories is as follows.

**Table 4.2.3.a – Gas Sector – Average Duration of Works (Days) – All Authorities**

Avg Duration for Period	Standard	Minor with Excav	Urgent	Emergency
Apr 01 - Sep 01	10	7	6	9
Oct 01 - Mar 02	7	4	4	7
Apr 02 - Sep 02	6	4	4	6
Oct 02 - Mar 03	6	5	4	7
Apr 03 - Sep 03	7	7	5	6
Oct 03 - Mar 04	6	7	5	7

- 4.2.4 For the telecom sector the average duration for each of the most common works categories is as follows.

**Table 4.2.4.a – Telecom Sector – Average Duration of Works (Days) – All Authorities**

Avg Duration for Period	Standard	Minor with Excav	Urgent	Emergency
Apr 01 - Sep 01	10	3	3	2
Oct 01 - Mar 02	9	3	3	2
Apr 02 - Sep 02	10	3	3	2
Oct 02 - Mar 03	9	3	3	2
Apr 03 - Sep 03	8	3	3	2
Oct 03 - Mar 04	8	3	3	2

- 4.2.5** For the water sector the average duration for each of the most common works categories is as follows.

**Table 4.2.5.a – Water Sector – Average Duration of Works (Days) – All Authorities**

Avg Duration for Period	Standard	Minor with Excav	Urgent	Emergency
Apr 01 - Sep 01	12	3	4	2
Oct 01 - Mar 02	11	3	4	3
Apr 02 - Sep 02	24	3	4	3
Oct 02 - Mar 03	24	3	3	3
Apr 03 - Sep 03	15	3	3	4
Oct 03 - Mar 04	11	3	3	4

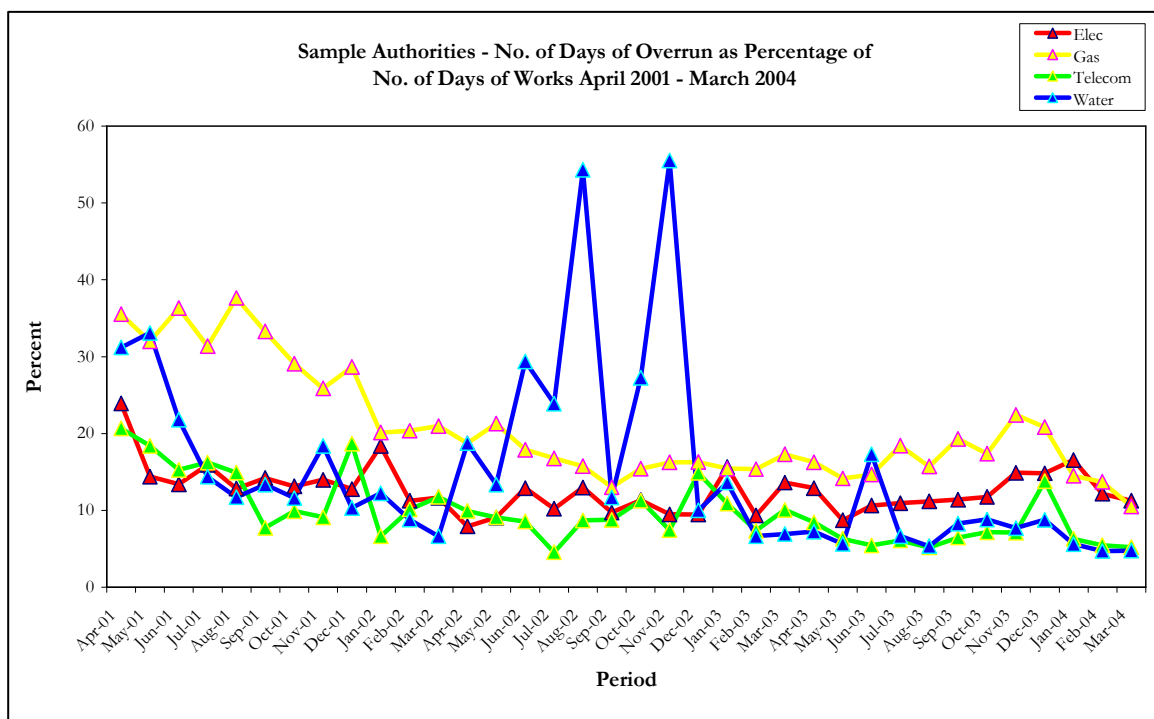
- 4.2.6** The average duration of minor works with excavation does not appear to exceed the prescribed period in any sector other than Gas. A more detailed analysis shows that the phases of work for this work type average only 3 days indicating that works are managed to minimise charging. The average duration of emergency works appears to be in the region of 7 days in the electricity and gas sectors. The durations of standard works in the water sector show a decrease towards the end of 2003 from 23 days. The exceptionally high values of duration of works for standard works for the periods April 2002 – September 2002 and October 2002 – March 2003 are as a result of incorrect noticing of their works by one water utility (as explained in Para 3.2.3 above).
- 4.2.7** It should be noted that the estimates of overrun shown in this section are based on the latest estimated completion dates as provided on the advance notices for each works. We have not taken into account the latest estimated completion dates that are included while works are in progress (Section 4.5 below).

### **4.3 Percentage Overruns**

- 4.3.1** The following chart and table show the number of days by which works overran within each sector as percentages of the total number of days of works. These are as follows.

**Table 4.3.1.a– Overrun as Percentage of Working Days**

Period	Elec (%)	Gas (%)	Telecom (%)	Water (%)	All (%)
Apr 01 - Sep 01	14.9	34.4	14.6	18.7	23.0
Oct 01 - Mar 02	12.1	24.5	9.9	11.6	15.5
Apr 02 - Sep 02	8.5	16.5	7.3	29.8	20.3
Oct 02 - Mar 03	9.9	15.1	8.6	28.7	19.1
Apr 03 - Sep 03	9.1	16.4	5.3	9.5	10.6
Oct 03 - Mar 04	11.7	16.2	6.4	5.9	10.3



There appears to be a significant and exceptional rise in the amount of overrun within the water sector in June 2002 and November 2002. This is a result of the incidence of unclosed works which are assigned to the month in which they started (Para 3.2.3 above). All sectors show a trend towards decline in the percentage of works that overrun towards the end of 2002. Thereafter the percentage of overruns in the electricity and gas sectors appear to be constant, with a trend towards an increase after August 2003. The trend in the telecom and water sectors is one of decline. Estimates of overrun are based on the latest estimated completion dates as provided on the advance notices for each works.

## 4.4 Works Completed Within Estimate

4.4.1 The following Table gives the percentage number of works completed within estimate (“% works comp”) and the percentage by which the estimated days exceeds the actual number of days (“%under”). This is provided for each sector. For instance, in April 2001, for the Electricity sector, 44% of the works were completed within estimate, and the actual number of days of works was 41% less than the estimated number of days.

**Table 4.4.1.a– Percentage of Works Completed Within Estimate**

Month	Elec		Gas		Telecom		Water	
	% works comp	% under	% works comp	% under	% works comp	% under	% works comp	% under
Apr-01	44	41	43	54	16	43	53	50
May-01	59	40	46	52	25	41	59	50
Jun-01	58	41	47	50	21	43	63	50
Jul-01	46	43	42	49	32	42	62	48
Aug-01	42	44	45	49	28	41	63	48
Sep-01	42	41	47	49	37	41	67	46
Oct-01	40	42	49	45	27	40	66	47
Nov-01	37	42	56	44	23	39	68	47
Dec-01	40	40	56	46	29	41	68	46
Jan-02	40	43	54	45	28	42	65	45
Feb-02	42	42	61	49	28	42	63	41
Mar-02	37	42	56	45	30	43	60	45
Apr-02	44	43	58	44	33	42	65	46
May-02	42	47	57	45	34	42	66	44
Jun-02	46	45	53	44	32	42	64	44
Jul-02	45	45	54	45	31	41	61	42
Aug-02	43	43	51	42	36	42	59	43
Sep-02	46	41	52	41	34	42	65	49
Oct-02	41	41	54	43	36	43	64	47
Nov-02	44	43	51	43	33	43	62	47
Dec-02	45	43	53	47	34	43	67	52
Jan-03	42	40	54	40	34	44	65	47
Feb-03	41	40	53	42	29	43	64	48
Mar-03	42	39	56	40	29	41	64	50
Apr-03	46	43	52	40	31	41	62	47
May-03	45	43	53	42	34	42	64	46
Jun-03	44	43	50	38	35	39	63	48
Jul-03	41	44	46	41	35	40	61	49
Aug-03	39	37	41	39	37	48	59	50
Sep-03	41	43	40	35	37	41	59	50
Oct-03	41	39	39	38	32	39	58	51
Nov-03	37	39	36	36	30	40	59	48
Dec-03	39	41	36	41	28	39	59	51
Jan-04	39	41	38	32	24	41	57	46
Feb-04	39	40	41	36	27	40	56	50
Mar-04	39	52	43	35	22	42	57	49

For all sectors the percentage of works within estimate appears broadly constant. The percentage of the excess appears to be high generally (in excess of 40%). If the undertakers can easily achieve such durations then there is no reason why their estimates should exceed their achieved durations by such amounts.

- 4.4.2** As discussed in our Second Annual Report, if the undertakers are not themselves submitting reduced estimates, it is the responsibility of the authorities to challenge such estimates to a reasonable level. The extent to which the authorities discharge this responsibility, as observed from the convergence of estimated and actual durations (diagram in Para 4.1 above) becomes an indicator of the performance of the authorities. If the utilities continue to set and beat their estimates, then the authorities are not participating in the operation of section 74 through challenges to the utilities' estimates. It is however accepted that there is a practical lower limit for the utilities' estimates that would preclude further reductions.
- 4.4.3** Successively lower reasonable periods should emerge from challenges that are backed up by observations and information on times to completion. If challenges are issued even in the face of lower estimates, the undertaker will eventually not be able to achieve his times and the works will continuously overrun. The authority will become aware that the utility's records of completion begin to show only overruns under continuous challenging, and should then raise the acceptable estimate to the optimum reasonable period.

## 4.5 Performance of the Sample Authorities in Applying Section 74

**4.5.1** The following table compares the percentages of works with overestimates with the percentages of works with overruns in each six month period commencing April 2001 – September 2001, within each of the sample authorities for their major and standard works only. These works categories were chosen for analysis because such works are recognised in the Co-ordination Code as requiring greater co-ordination between authority and undertaker to minimise disruption.

**Table 4.5.1.a– Comparison of Works with Overestimates and Underestimates**

Authority	Underrun						Overrun					
	Apr01-Sep01	Oct01-Mar02	Apr02-Sep02	Oct02-Mar03	Apr03-Sep03	Oct03-Mar04	Apr01-Sep01	Oct01-Mar02	Apr02-Sep02	Oct02-Mar03	Apr03-Sep03	Oct03-Mar04
BarkDag	55.9	58.3	43.6	50.8	56.6	58.5	5.3	3.8	5.2	5.0	11.8	7.5
BathNES	50.5	56.9	50.2	49.7	35.5	29.4	17.7	6.0	4.4	3.3	3.6	2.3
Bexley	65.5	59.7	61.3	61.1	54.8	54.4	10.5	5.1	3.2	5.5	7.2	6.9
BristolCity	62.5	66.0	70.1	71.2	66.2	59.4	12.1	6.1	1.3	1.5	1.9	1.5
Bromley	53.6	70.7	57.7	57.6	53.8	49.2	23.0	4.1	3.3	6.1	4.4	3.8
Coventry	33.3	42.7	22.2	51.1	53.4	50.7	7.1	8.9	11.1	6.2	1.4	1.0
Croydon	51.3	63.2	53.8	50.3	50.8	40.4	27.8	4.5	5.0	5.4	3.1	6.2
DerbyCity	43.0	54.5	38.1	35.8	41.0	35.8	34.1	19.3	5.4	6.9	6.8	9.2
Devon	40.9	42.1	38.8	37.2	37.9	31.0	13.4	8.3	5.5	3.0	4.1	2.8
Doncaster	80.7	77.1	70.7	60.5	39.5	34.2	9.0	7.5	2.2	2.3	5.8	16.0
EastSussex	50.9	59.7	56.9	60.3	59.7	45.3	20.2	4.5	1.7	3.5	0.8	1.7
Glos	43.4	52.6	59.7	55.0	40.3	33.4	20.0	7.2	2.2	1.6	4.2	1.6
Greenwich	63.7	57.8	53.5	61.8	63.0	61.3	7.4	3.5	5.3	6.8	2.5	1.8
HamFulham	48.4	51.0	43.8	43.2	54.8	55.8	9.8	9.4	2.5	2.7	6.0	13.5
Harrow	61.8	46.6	47.2	30.1	49.8	54.5	18.9	12.0	7.9	10.4	8.2	11.4
KensChelsea	55.1	52.2	46.0	45.4	55.1	57.4	14.3	5.8	1.8	3.4	9.3	10.4
Kirklees	51.9	43.1	43.4	31.3	19.7	19.9	11.9	8.0	2.8	2.3	1.6	10.5
LeedsCity	60.0	41.9	43.8	36.5	24.8	22.1	11.3	10.9	2.7	2.5	1.8	14.3
Newcastle	58.2	63.0	67.5	55.6	41.8	42.1	5.5	5.3	1.4	1.7	2.2	1.5
Newham	55.8	58.2	51.2	57.3	59.9	57.4	14.2	3.5	4.9	2.7	5.4	10.2
NYorkshire	53.9	46.6	57.5	45.5	47.1	37.2	10.0	11.4	1.7	2.8	1.6	8.8
NottCity	51.1	49.2	41.1	36.9	33.7	32.3	22.7	13.8	1.9	4.8	12.9	10.6
NottShire	55.0	66.0	67.0	56.1	43.4	38.3	25.5	13.4	3.7	6.2	7.8	10.7
Westminster	67.7	62.8	49.4	60.0	56.7	58.7	7.0	4.8	2.1	5.2	5.2	9.4
YorkCity	44.6	41.2	55.7	54.4	52.6	34.9	10.8	12.1	4.6	5.3	3.6	25.3

The percentage of works that are overestimated is far greater than the percentage of works that have overrun for the sample authorities. This behaviour is consistent as repeated overestimating and achievement of reductions in overruns will go hand in hand.

**4.5.2** The charts below show the distribution of works in each of the six-month periods commencing April 2001 – September 2001. There is one graph for each six-month period so

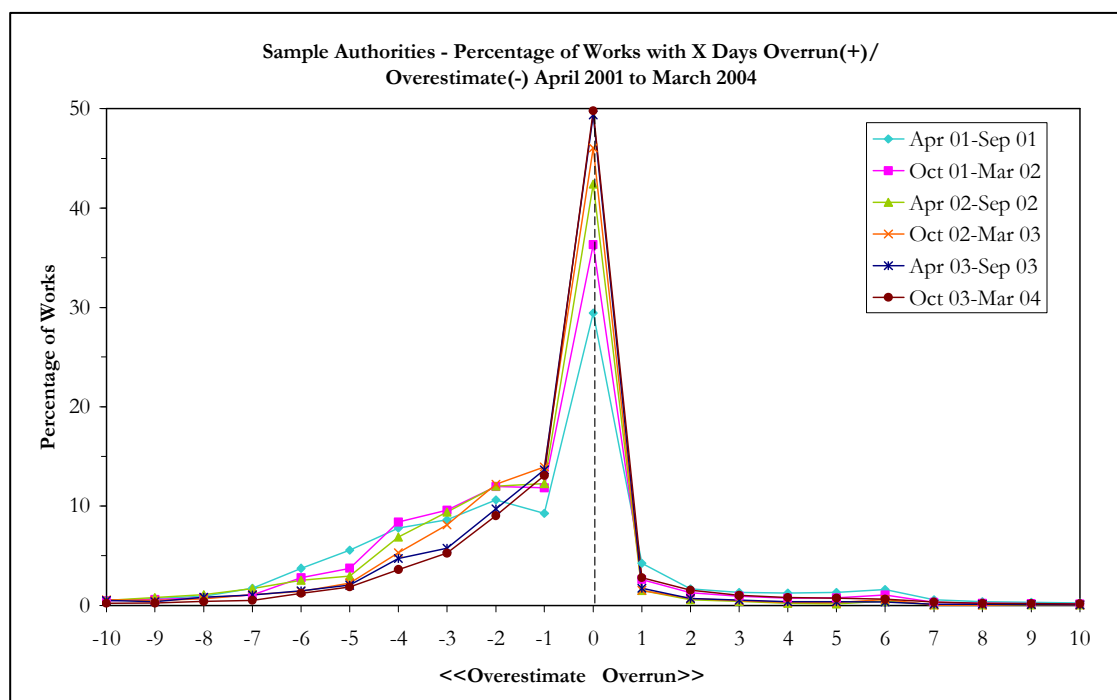
that the trend towards overrun or overestimating can be readily observed. For each period, the number of days of overestimate (the negative values) or overrun (the positive values) is plotted against the percentage of works. The table is as follows.

**Table 4.5.2.a– Percentage of Works Overrunning/Under running by n days**

	Overrun	Apr 01- Sep 01	Oct 01- Mar 02	Apr 02- Sep 02	Oct 02- Mar 03	Apr 03- Sep 03	Oct 03- Mar 04
↑ O V E R E S T I M A T E ↓	-15	0.1	0.1	0.2	0.1	0.1	0.1
	-14	0.2	0.1	0.1	0.2	0.1	0.0
	-13	0.1	0.1	0.2	0.2	0.1	0.1
	-12	0.1	0.2	0.2	0.1	0.2	0.1
	-11	0.3	0.3	0.3	0.2	0.2	0.1
	-10	0.5	0.5	0.5	0.6	0.5	0.2
	-9	0.7	0.6	0.8	0.5	0.4	0.2
	-8	0.9	0.8	1.1	0.7	0.8	0.4
	-7	1.7	1.1	1.7	1.1	1.1	0.5
	-6	3.7	2.8	2.5	1.4	1.5	1.2
	-5	5.6	3.7	3.0	2.3	2.0	1.9
	-4	7.8	8.4	6.9	5.3	4.7	3.6
	-3	8.6	9.6	9.4	8.1	5.7	5.3
	-2	10.6	12.0	12.0	12.2	9.7	9.0
	-1	9.3	11.8	12.3	13.9	13.7	13.1
↑ O V E R R U N	0	29.4	36.3	42.4	46.0	49.4	49.8
	1	4.2	2.6	1.5	1.5	1.7	2.8
	2	1.7	1.3	0.6	0.7	0.7	1.5
	3	1.3	0.9	0.4	0.5	0.5	1.0
	4	1.3	0.7	0.2	0.3	0.4	0.8
	5	1.3	0.8	0.2	0.3	0.4	0.7
	6	1.6	1.1	0.4	0.6	0.3	0.6
	7	0.6	0.3	0.1	0.0	0.1	0.3
	8	0.4	0.2	0.0	0.0	0.1	0.2
	9	0.3	0.2	0.1	0.1	0.1	0.2
	10	0.3	0.1	0.0	0.0	0.1	0.2
	11	0.3	0.1	0.0	0.0	0.0	0.2
	12	0.2	0.1	0.0	0.0	0.0	0.1
	13	0.1	0.1	0.0	0.0	0.0	0.1
	14	0.2	0.1	0.0	0.0	0.0	0.0
	15	0.2	0.0	0.0	0.0	0.0	0.1



The chart that corresponds to the above table is as follows.



The above chart illustrates the comparative overestimation of works in each period. It also shows that the percentage of works that achieve estimate is slowly increasing (49.2% in the last period, October 2003 – March 2004).

A cut-off date of 10 days either side of the graph has been chosen. This eliminates works that have been found in the notices with unreasonable completion dates. Furthermore, these are for major and standard works and require a minimum of 7 days' advance notice of works to allow for discussion and co-ordination.

**4.5.3** We have gauged the extent of challenging from our third survey of the authorities regarding their usage of section 74 (Appendix E). The results are as follows:

**Table 4.5.3.a– Challenging by the authorities**

Approach	Count	%
Don't challenge at all	6	7
Only challenge occasionally	31	35
Review most works and challenge where appropriate	23	26
Review all works and challenge where appropriate	26	30
Always challenge	2	2
No response	0	0

Re-estimation of durations of works continues to occur. Increased challenging would reduce this, but can only take place if electronic exchange of notices is employed.

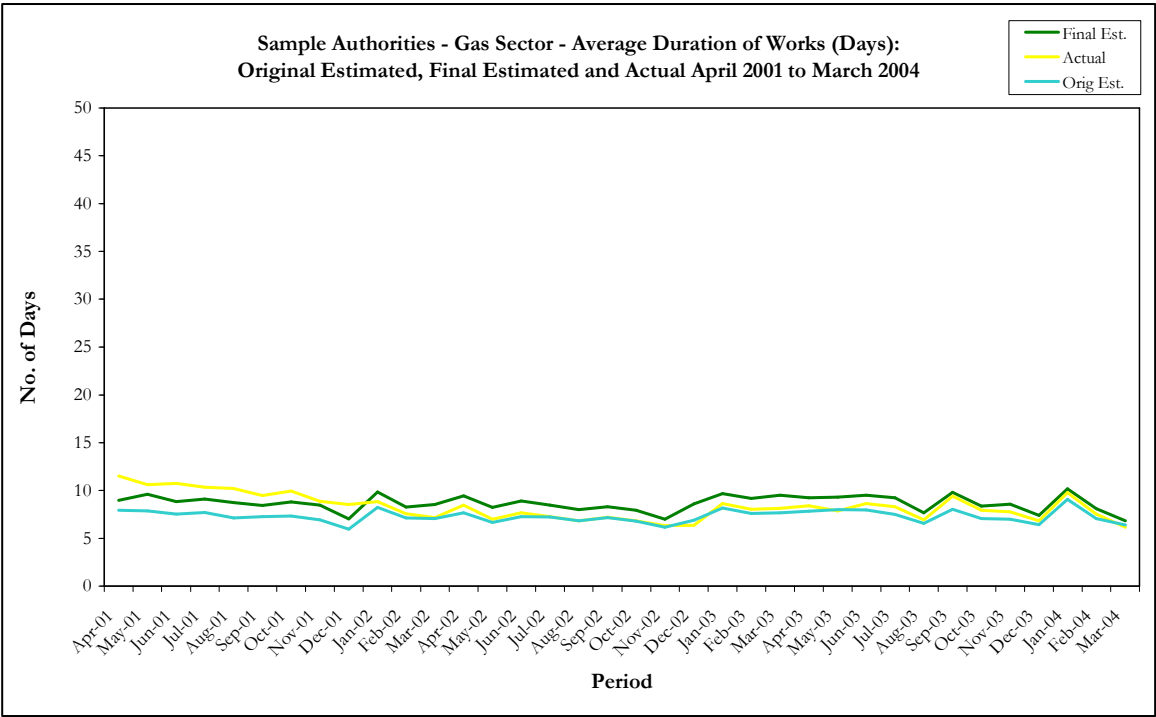
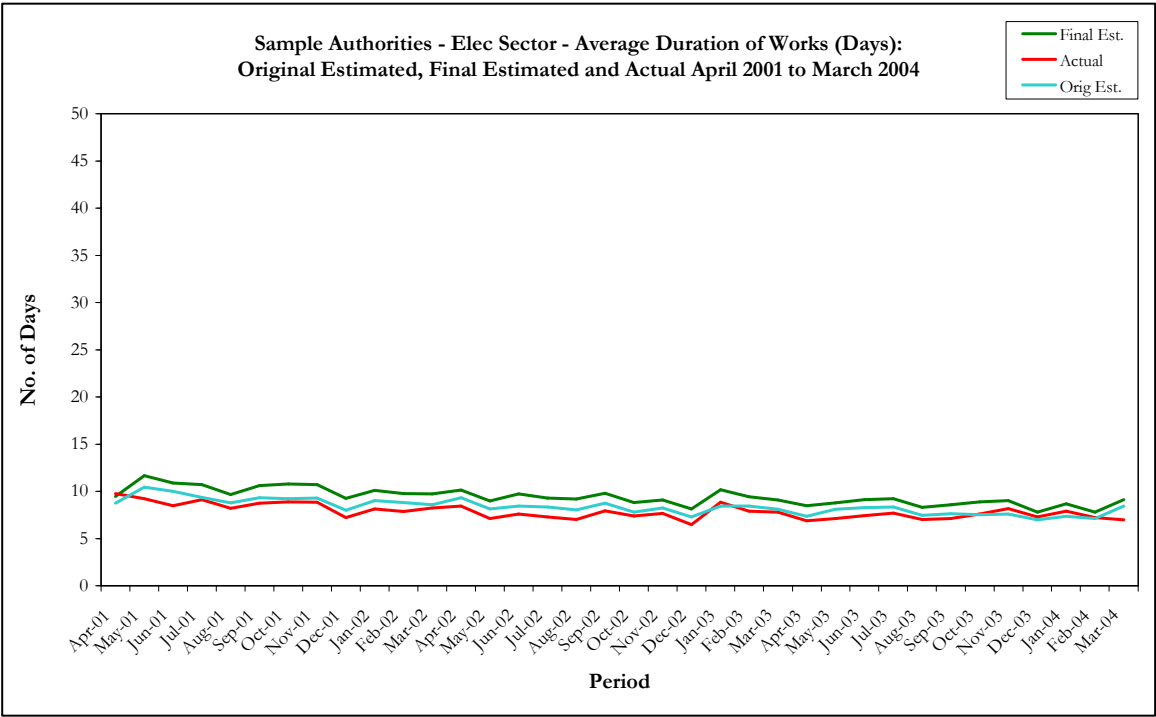
**4.5.4** We have also examined our database of 8 million records for incidences of electronic challenges. We have found 53,000 challenges which in percentage terms is negligible. This does not of course preclude the dispatch of challenges on paper e.g. by fax although we cannot process these.

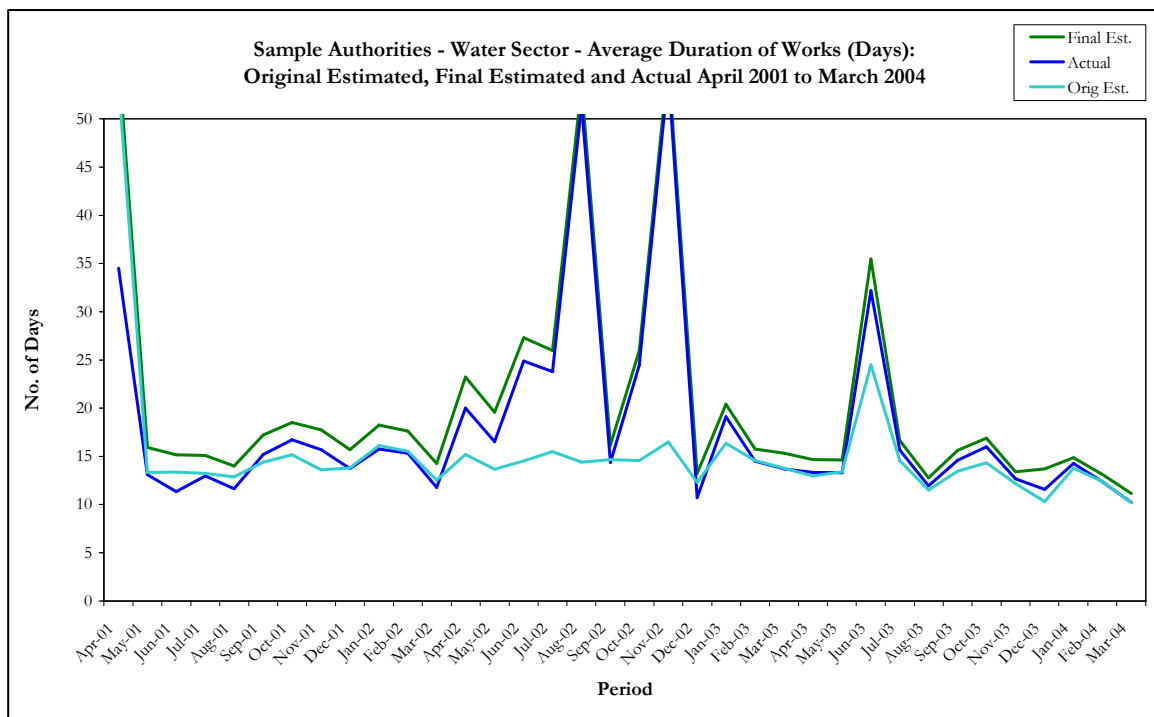
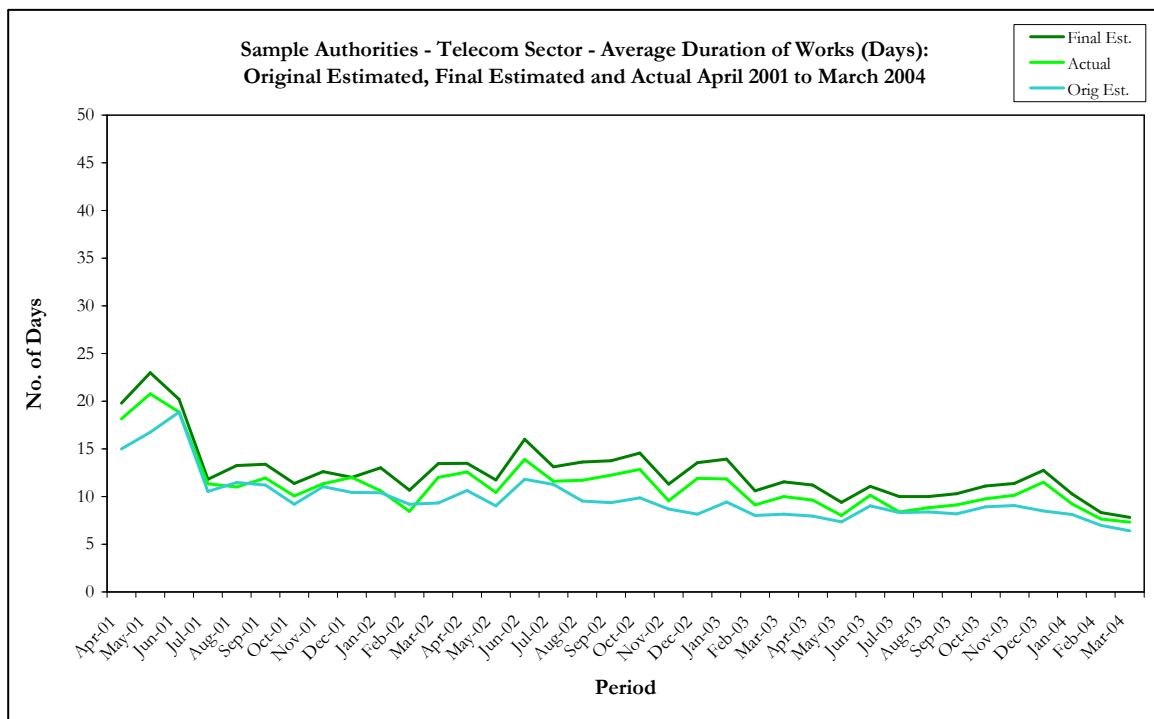
**4.5.5** In order to explain the trend in overestimating that the above graph shows, we have examined sets of notices relating to individual major and standard works. In general, from April 2001 to March 2003, we have noted that estimates are revised upwards over the life of the works as is shown in the following table of average duration (days) of works.

**Table 4.5.5.a– Comparison of Major & Standard Works duration with estimates**

Period	Electricity			Gas			Telecom			Water		
	Orig Est.	Final Est.	Act.	Orig Est.	Final Est.	Act.	Orig Est.	Final Est.	Act.	Orig Est.	Final Est.	Act.
Apr-01	9	9	10	8	9	12	15	20	18	54	56	35
May-01	10	12	9	8	10	11	17	23	21	13	16	13
Jun-01	10	11	8	8	9	11	19	20	19	13	15	11
Jul-01	9	11	9	8	9	10	11	12	11	13	15	13
Aug-01	9	10	8	7	9	10	11	13	11	13	14	12
Sep-01	9	11	9	7	8	9	11	13	12	14	17	15
Oct-01	9	11	9	7	9	10	9	11	10	15	19	17
Nov-01	9	11	9	7	8	9	11	13	11	14	18	16
Dec-01	8	9	7	6	7	9	10	12	12	14	16	14
Jan-02	9	10	8	8	10	9	10	13	11	16	18	16
Feb-02	9	10	8	7	8	8	9	11	8	16	18	15
Mar-02	9	10	8	7	9	7	9	13	12	13	14	12
Apr-02	9	10	8	8	9	8	11	13	13	15	23	20
May-02	8	9	7	7	8	7	9	12	10	14	20	17
Jun-02	8	10	8	7	9	8	12	16	14	15	27	25
Jul-02	8	9	7	7	8	7	11	13	12	15	26	24
Aug-02	8	9	7	7	8	7	10	14	12	14	54	51
Sep-02	9	10	8	7	8	7	9	14	12	15	16	14
Oct-02	8	9	7	7	8	7	10	15	13	15	26	24
Nov-02	8	9	8	6	7	6	9	11	10	16	56	55
Dec-02	7	8	6	7	9	6	8	14	12	12	13	11
Jan-03	8	10	9	8	10	9	9	14	12	16	20	19
Feb-03	8	9	8	8	9	8	8	11	9	15	16	15
Mar-03	8	9	8	8	9	8	8	12	10	14	15	14
Apr-03	7	9	7	8	9	8	8	11	10	13	15	13
May-03	8	9	7	8	9	8	7	9	8	13	15	13
Jun-03	8	9	7	8	10	9	9	11	10	24	35	32
Jul-03	8	9	8	8	9	8	8	10	8	15	17	16
Aug-03	7	8	7	7	8	7	8	10	9	12	13	12
Sep-03	8	9	7	8	10	9	8	10	9	13	16	15
Oct-03	8	9	8	7	8	8	9	11	10	14	17	16
Nov-03	8	9	8	7	9	8	9	11	10	12	13	13
Dec-03	7	8	7	6	7	7	9	13	12	10	14	12
Jan-04	7	9	8	9	10	10	8	10	9	14	15	14
Feb-04	7	8	7	7	8	8	7	8	8	12	13	12
Mar-04	8	9	7	6	7	6	6	8	7	10	11	10

The above table is represented in the following charts:





We have noted from the above table and charts that the average actual duration, original estimated duration and final estimated duration now show convergence. This we believe represents an improvement from our findings in the Second Annual Report. These stated that in all cases the final estimated duration was greater than the average actual duration. The latter in turn was greater than the original estimated duration i.e. major and standard works would consistently overrun if the original estimates were to stand.

**4.5.6** Our conclusions in the Second Annual Report were that apart from the gas sector a significant amount of re-estimating of major and standard works was taking place. There appeared to be little challenging although standard works constituted a common works category. We believe that the utilities are improving their estimating, and their actual durations of works are closer to the re-estimated durations, although re-estimating is still occurring. The attitude of the utilities however seems somewhat puzzling as more accuracy in original estimates should suffice.

## **4.6 Invoicing and Amounts Recovered**

**4.6.1** Section 74 of NRSWA provides a highway authority with the powers to charge an undertaker for occupation of the highway beyond a set period. This set period is one of the following:

- (i) the “Prescribed Period” – this is the period during which charges cannot be levied and is set at three working days by the Secretary of State in the Regulations
- (ii) the “Reasonable Period” – this is the duration of the works which is defined by the start and end date in the undertaker’s notices. If the authority challenges this duration within 3 days, the authority’s duration becomes the Reasonable Period.

The undertaker may revise his estimate of the expected duration of the works at any time before the completion of the works, by notification. This revised estimate becomes the Reasonable Period unless challenged in turn by the authority.

The charge is calculated from the number of days of occupation beyond the set period (either the Prescribed Period or the Reasonable Period), the type of works undertaken, and the reinstatement category of the street. Information on the days of occupation and the type of works is obtained from the notices relating to the works. The reinstatement category of the street is set by the authority and published in its street gazetteer, and is an indicator of the importance of the street as a route for different types of traffic. The higher the reinstatement category, the higher the charge for unreasonable occupation.

**4.6.2** Regulation 5(8) of the Section 74 Regulations states that “a highway authority may reduce the amount, or waive payment, of a charge in any particular case, in such classes of case as they may decide, or in all cases other than a particular case or such class of case as they may decide”. Also, there are some works that are exempt from section 74 charges but these works cannot be readily identified from the notifications alone. This deficiency within the noticing regime was identified in the first Annual Report and is rectified in the 3<sup>rd</sup> Edition of the ‘Co-ordination’ Code of Practice to address the problem. The ability of authorities to reduce or waive charges, together with the works that are exempt from charges, means that invoice amounts raised by highway authorities may be less than the liability for section 74 charges that would be calculated from the notice information alone.

**4.6.3** It is well known that a number of undertakers have questioned their liability to pay section 74 charges for ‘administrative’ overruns, i.e. where work has been completed on the ground and the site cleared but the notification is sent in late. The regulations and the Code of Practice clearly state that the section 74 scheme is based on the notifications and we understand that this was indeed the intention of the HAUC Working Group who developed the scheme.

**4.6.4** As part of the study into the effectiveness of the section 74 scheme we have examined the overrun charges invoiced and recovered from the 25 sample authorities in 2003. These

returns were again sparse, so the opportunity was taken to gather information using a third questionnaire to all authorities (Appendix E). Again at least three of the sample authorities that claimed to be operating s74 were not charging for overruns and therefore had not raised any invoices, and one authority (Coventry) made a decision not to do so in 2003 following a reorganisation of its activities. The third questionnaire asked for detailed invoice and recovery information for the period 1 January to 31 December 2003.

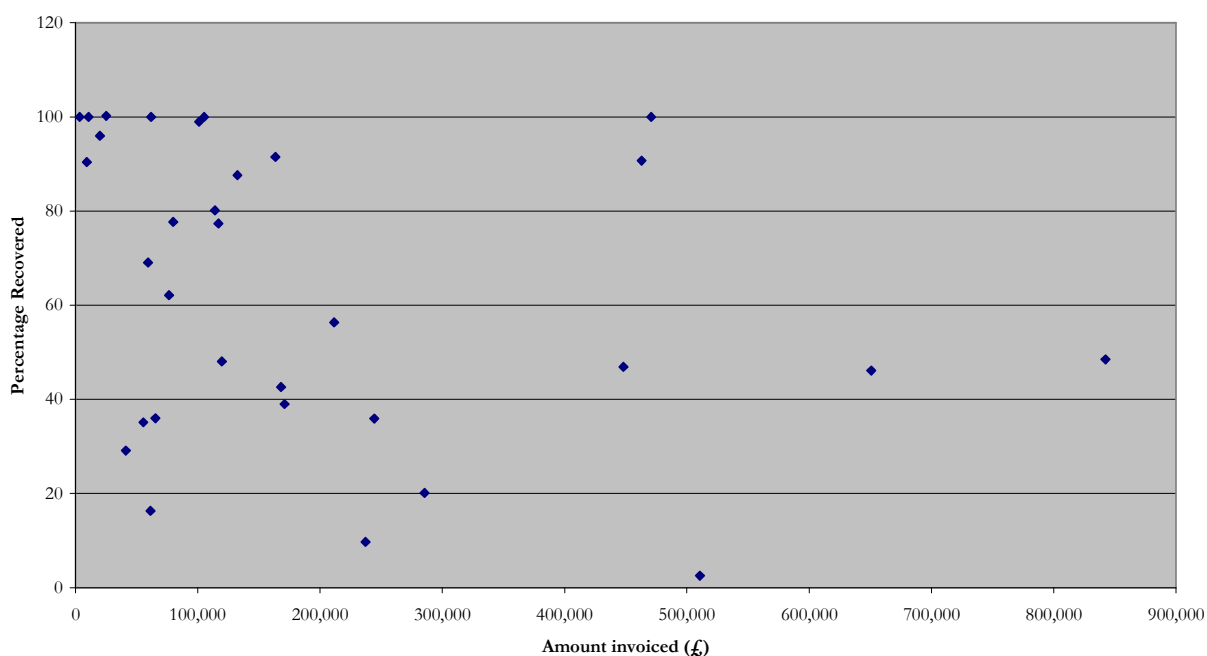
- 4.6.5** We received 88 responses to the third questionnaire from highway authorities in England. 35 responses contained detailed information on invoice returns at the time of writing this report. The following table summarises the total amounts invoiced and recovered:

Amount Invoiced (£)	15,640,000
Amount Recovered (£)	4,802,242
Percentage Recovered(%)	31

A number of authorities are discussing the estimated amounts to be invoiced with the utilities. This avoids delays in payment as a result of incorrect invoicing e.g. for work that is carried out on behalf of the authorities (this can occur because the present notice system does not support the identification of such works). However it has not been possible to confirm whether the amounts invoiced are the agreed invoices. Our understanding is that the recovery rate on these is much greater than 31% although we have no information to support this.

- 4.6.6** The following scatter chart shows the variation in the total amounts invoiced and also in the amounts recovered by authorities. The chart excludes figures from two authorities who invoiced £8m and £9.5m (their inclusion affects the scales and thereby the clarity of the chart). These authorities recovered less than 1% and about 5% respectively. In the chart, each dot represents the amount invoiced and the percentage recovered by a single authority.

### Section 74 Invoice Recovery (Amounts < £1m)



**4.6.7** It is evident from the above chart that there is a trend towards a reduction in recovery rate as the amounts invoiced increase. The following authorities have invoiced amounts of more than £1 million:

**Table 4.6.7.a**

Authority No	Amount Invoiced (£ million)	Percentage Recovered (%)
1	1.54	15
2	1.66	21
3	1.88	21
4	4.60	2

This trend may be as a result of scepticism on the part of the utilities relating to invoicing of large amounts.

**4.6.8** There have been delays in recovery partly as a result of the increasing trend towards discussion around proposed chargeable amounts followed by dispatch of actual invoices. In their responses to the third questionnaire the majority of authorities indicated that this was their preferred mechanism for facilitating payment by the utilities. However they continued to report a reluctance to pay by the utilities, the most frequent reason being that the perceived overrun was in fact due to an “administrative overrun”.

**4.6.9** In summary, it is clear that:

- (i) the quality of notifications may still be hindering the process of establishing accurate charge amounts;
- (ii) the percentages being recovered on the amounts being invoiced are generally on the increase; however the greater the amount invoiced the smaller the percentage recovered.
- (iii) although there is an overall trend showing that higher invoice amounts have a lower recovery rate, and
- (iv) there is clear evidence that undertakers are resisting paying for administrative overruns post Leicestershire vs. Transco.

**4.6.10** Our recommendations made in the Second Annual Report earlier still hold and are as follows in relation to the effective application of section 74:

- (i) the noticing regime is modified to indicate those works that are exempt from section 74 charges;
- (ii) the discretionary reduction of charges by authorities is discouraged and where used, authorities are required to publish a clear policy such as only charging on specific classes of roads, at particular locations or in particular defined circumstances, and;
- (iii) more rigorous debt recovery procedures are implemented by highway authorities.



## 5. Highway Works

### 5.1 Introduction & Background

- 5.1.1** Halcrow's commission to study the extent of street works and the effects of the application of the section 74 scheme did not, at the outset, include any examination of works for road purposes or 'highway works' as they are more commonly known.
- 5.1.2** In the early months of the study Halcrow were asked by the Department to carry out a preliminary investigation into the manner in which local authorities manage their own highway works and to make an assessment of the extent of highway works in England.
- 5.1.3** The outcome from these investigations were reported on fully in the first annual report and summarised in the second Annual Report. The principal findings were that comparison of street works and highway works was not possible because of the wide differences in the methods of recording highway works among highway authorities, and the significant variations in the scope of highway works themselves. As a result no indication could be given as to the proportions of works that were highway works.
- 5.1.4** In the Second Annual Report the statutory requirements relating to the recording of highway works were also highlighted. It was pointed out that highway works are not subject to the same prescriptive method of recording as street works, which prevents any comparison being made. A recommendation was made that highway works be registered using requirements of the Code of Practice for Highway Works (Institute of Highways and Transportation Second Edition 2003).

### 5.2 Further Work Undertaken

- 5.2.1** The only further work undertaken to date has been the development of a pro-forma and a data collection methodology based on the existing notification requirements for street works. The pro-forma was reported in the Second Annual Report and is reproduced below, and is designed to capture the minimum amount of information consistent with current methodologies for acquiring information on street works.

**Table 5.2.1.a - Road Works data Collection Pro-forma**

Field	Type	Values/Format	Comments
Works Reference	C (20)	Text	Must be a unique code for the works.
USRN	N (8)	Valid NSG reference only	USRN for the street where the works are taking place.
Works Category	N (1)	1, 2, 3, 4, 5 or 9	Sub-set of the Works_Type DfT data capture code
Location	N (1)	1, 2, 3, or 4	The DfT Street_Location_Code data capture code
Start Date	D (10)	DD/MM/YYYY	First day of works (actual start date)
End Date	D (10)	DD/MM/YYYY	Last day of works (actual completion date)
Traffic Sensitive	C (1)	'Y' or 'N'	'Y' where works are in Traffic Sensitive parts of the street or at undertaken at Traffic Sensitive times.
Works Description (OPTIONAL)	C (100)	Text	Optional description of works can be included if available. Will not be used within the analysis of the data.

In order to assist with the comparison, a comprehensive descriptive list of highway works was prepared, and 'works categories' were assigned to each item.

A number of the street authorities who had assisted with the initial study into highway works had indicated that they would be willing to continue to assist Halcrow by collecting detailed information on their own works.

A copy of the document detailing the proposed data methodology was submitted to these authorities and the possibility of collecting data to the defined formats was discussed. None of the authorities were able to provide information to the level of detail required. It is clear that fairly accurate information may be available for the larger planned works such as resurfacing schemes but information on the smaller works is not so readily available. Even with larger works, authorities indicated that accurate start and end dates were not necessarily recorded. Halcrow have continued to look for authorities willing to help by collecting this information but as yet have been unable to identify any.

### **5.3 Conclusion and Summary**

#### **5.3.1** Our conclusions from the Second Annual Report still hold. We believe that the systems and procedures currently in place within highway authorities do not allow an assessment of extent to be made. Detailed information on works, such as start and end dates and precise locations, are quite often not recorded at all and are rarely recorded in a useable form on a register.

Highway authorities state that different works are managed by different parts of their organisations and sometimes their contractors are responsible for programme some of the smaller short term works.

There is currently no incentive for authorities to record details of their own works that fall below the threshold defined in the Code of Practice (20m<sup>2</sup> of resurfacing) yet all works involving excavation are notified by undertakers and registered.

An authority cannot effectively discharge the duty to co-ordinate works when it does not hold any detailed information on the location and duration of its own works.

## **6. Works in the Footway**

### **6.1 Introduction**

- 6.1.1** The utilities have indicated that the majority of their works take place only in the footway and that no part of the carriageway is occupied. We can confirm from the notices collected from the sample authorities that the majority of the utilities' reinstatements are notified as being in the footway. However these notices do not provide enough detail to show whether plant, spoil or barriers and other safety equipment occupy any part of the carriageway while such works are executed.
- 6.1.2** Our studies on disruption indicate that encroachment on the carriageway can cause delay, the extent and cost of which is dependent on the standard of the road. We have developed mechanisms for the estimation of the cost of that delay which require information on the area of occupation of the carriageway from utilities' street works. We have found up to 30% increase in the cost of delay depending on the assumptions made regarding the extent of the encroachment on the carriageway from works that are notified as footway works.
- 6.1.3** It was therefore agreed that a limited survey of footway works should be carried out in order to obtain detailed information on the actual area occupied while such works are in progress. A programme of inspections of such works was carried out by inspectors equipped with digital cameras in the North of England, focussing on the City of York, the Borough of Harrogate (as agent for North Yorkshire County Council (NYCC) on highway matters), and the rural area between York and Harrogate that is part of the highway network managed by North Yorkshire County Council. These inspections took place in November 2003.
- 6.1.4** Each inspector was given initial training on recording the information regarding the area of the site occupied on a form. They were also asked to take photographs of each site of footway works. The notices relating to the selected areas were obtained from NYCC, and the City of York by email each evening by prior arrangement. All notifications of works that were not proposed or in progress were eliminated and the remainder was passed to the inspectors to be used to select the final sites and to note details of the works and the status of the streets on which they were taking place for use in the analysis. The type of utility that was carrying out the works was also noted.

**6.1.5** In the four-week period 283 sites had been inspected, 281 with works in progress. Works in the footway (“footway works” in the table below) and works in the carriageway (“carriageway works”) were distinguished through the notices. The following table summarises the incidence of footway works where encroachment of the carriageway was observed.

**Table 6.1.5.a– Ratios of Carriageway and Footway Only Works**

Utility	No of Works	Carriageway Works		Footway Works		F/W Works found to be Occupying C/W (%)
		C/W & F/W Excavated	Only C/W Excavated	Only F/W Excavated	C/W Occupied when F/W Excavated	
Electricity	52	2	4	46	25	54.35
Gas	102	14	15	73	20	27.40
Telecom	33	1	2	30	6	20.00
Water	94	7	27	60	19	31.67
<b>Total</b>	<b>281</b>	<b>24</b>	<b>48</b>	<b>209</b>	<b>70</b>	<b>33.49</b>

The percentage of sites that were notified as footway works was high as summarised below:

Electricity      46 out of 54    (85%)

Gas                73 out of 102   (73%)

Telecom          30 out of 33    (91%)

Water             60 out of 94    (64%)

Encroachment of the carriageway occurred in between 20% and 54% of cases depending on the sector concerned.

The percentages of “footway works” in each sector as obtained from copies of the notices provided by the sample authorities was as follows:

Electricity      89%

Gas                61%

Telecom          86%

Water             64%

There is a close comparison with the proportions found from the survey. The greatest difference is to be found in the gas sector (12% difference between notices and survey results). In other sectors there is a closer match.

- 6.1.6** Of the 70 footway works where part of the carriageway was found to be occupied, the reason for the encroachment was identified as follows:

**Table 6.1.6.a– Reasons for Encroachment on Carriageway**

	Spoil	Pedestrian Walkways	Safety	Vehicles in Coned Area	Vehicles outside Coned Area
% of works	47%	29%	11%	13%	23%

- 6.1.7** The area of carriageway occupied was found to be as follows:

**Table 6.1.7.a– Areas of Works**

Utility	Average Size of Footway Works (m)		Average Size of Carriageway Works (m)	
	Length	Width	Length	Width
Electricity	18	3	15	2
Gas	26	2	20	2
Telecom	23	3	25	2
Water	16	3	10	1

This indicates a close correlation between the dimensions of the footway works and the dimensions of the area of occupation in the carriageway.

## **6.2 Inclusion of Footway Works in Estimation of Delay Costs**

- 6.2.1** The survey provides confirmation of our assumption that a proportion of footway works should be taken into account when estimating delay costs. We have used rounded figures for these proportions by sector as follows:

Electricity      50%

Gas                25%

Telecom         20%

Water             30%

The dimensions of the encroachment on the carriageway from these footway works are taken to be the same as the actual dimensions of the footway works.

## **7. Conclusions**

### **7.1 Receipt of Data by Halcrow from the Authorities**

**7.1.1** The supply of information from the sample authorities appears to be consistent month on month from October 2001 onwards and through the third year of operation of section 74..

**7.1.2** The authorities confirm however that the resources that are allocated to manage street works effectively continue to be inadequate.

**7.1.3** Training and development schemes in the management of street works should be considered.

### **7.2 Noticing Procedures**

**7.2.1** In the Second Annual Report our conclusion was that the Co-ordination Code does not define a number of aspects of the noticing regime. These omissions include the sequencing of notices and cancellation of works. Furthermore, calculation of section 74 charges requires information that is outside that found in the notices. This was affecting the production of invoices and the resolution of correct invoice amounts.

**7.2.2** These issues are currently being addressed by HAUC and a new edition of the Co-ordination Code has been developed but, as a result of the introduction of new street works legislation through the Traffic Management Act, the document had not been released at the time of publication of this Report.

### **7.3 Extent of Street Works**

**7.3.1** The indicator “Number of Days of Works” shows the same seasonal variations in days worked across all utility sectors but there is a difference in extent. The water sector presence on the highway is almost the same as that of the electricity and gas sectors together (200,000 to 250,000 water; consistently about 100,000 electricity; 120,000 to 160,000 gas; and consistently about 60,000 telecom – Section 3.3.1). The trends are the same for the indicator “Number of Works per Month” (Section 3.6.1).

**7.3.2** We estimate the number of works occurring on streets for which authorities excepting the Highways Agency and TfL are responsible remains at 1.2 million annually from the notices.

**7.3.3** The number of phases in which works are undertaken has shown a decline towards the end of 2003.

**7.3.4** There are circumstances where occupation of the highway appears from the notices to have taken place but probably has not. This we believe to be partially a factor of the lack of clear rules about abandoning and postponing works and partly due to poor noticing practices by some utilities, for example the apparent use of the works clear notice to postpone works.

**7.3.5** This use of repeated “works clear” notices to postpone and abandon works is particularly true of one utility in the water sector (Section 3.8.3) and if continued would prevent the proper management of street works on the highway by the corresponding authorities.

**7.3.6** Overall the undertakers continue to work in similar seasonal patterns although the individual extent of their works may be different.

## **7.4 Soundness of the Scheme**

**7.4.1** We had previously reported that we believe the scheme to be fundamentally sound and not requiring any significant modification. In November 2003 the Court of Appeal ruled against Leicestershire County Council in their case against Transco regarding the application of Section 74. The judgement was critical of the existing legislation, particularly the regulations that support the scheme. Having reviewed the judgement in detail Halcrow still believes the scheme to be fundamentally sound, excepting of course the known discrepancies in the secondary legislation.

**7.4.2** The case centred on two specific issues:

- (i) whether the provision contained within Regulation 5(6) applies to works other than remedial works, and;
- (ii) whether the deeming effect of this provision is rebuttable.

**7.4.3** The Appeal Court judgement was that Regulation 5(6) does apply to all works and, on the second issue, that the deeming provision is rebuttable.

**7.4.4** The first issue arose from the reference to Regulation 5(3) from within Regulation 5(6). Perhaps as a result of an error in drafting the reference should perhaps have been made to Regulation 5(4).

**7.4.5** The judgement on the second issue provides necessary clarification on whether an undertaker can correct an error made in a notification i.e. whether the deeming provision relating to the continuation of works and the calculation of overruns, is rebuttable. Contrary to a popular view, purported by some highway authorities, the judgement does not result in a need to base Section 74 overrun charges on visual site inspections. What is clear however is that authorities need to implement procedures to ensure that the legislation is vigorously enforced and authorities pro-actively pursue prosecutions of undertakers who fail to give proper notice.

## **7.5 Effectiveness of Section 74 in Controlling Disruption**

**7.5.1** The average duration of works has reduced in each six-month period commencing April 2001. It has stabilised around the following values: 7 days for standard works, 3 days for minor works with excavation, 6 days for urgent works and 5 days for emergency works. This is the average across all sectors.

**7.5.2** Percentage overruns appear to be consistently at between 16% and 20% for the electricity and water sectors and about 10% for the gas and telecom sectors. This represents an improving trend particularly in the gas sector.

**7.5.3** The undertakers still appear to be overestimating between 30% and 40% of their major and standard works. However the actual durations, original estimates and final estimates appear to be converging.

## **7.6 Performance of the Authorities**

**7.6.1** The utilities are generally overestimating their major and standard works and the final durations are approaching but are usually less than the final estimate.

- 7.6.2** The authorities, with some exceptions, are not challenging the practice of re-estimates of duration by the authorities to ensure that durations of occupation of the highway by the utilities are minimised.

## **7.7 Use of Phases**

- 7.7.1** Phases of works are usually identified in a sequence of notices when a permanent reinstatement takes place. When the permanent reinstatement cannot occur works clear notices are being issued. The use of multiple “works clear” notices in a sequence of works has stabilised in 2003 but persists. This trend does not improve co-ordination.

## **7.8 Highway Works**

- 7.8.1** There is little data available on the extent of highway works and on the durations of such works. The regulations made under section 53 of NRSWA provide for significantly different requirements for the registration of highway works from the requirements applying to the notification of street works.
- 7.8.2** The duty of co-ordination of activities on the highway cannot be exercised if the scope and size of highway works is unknown and cannot be determined because reliable information does not exist.

## **7.9 Data Quality**

- 7.9.1** An analysis of the files received from the sample authorities indicates that up to 4.5% do not conform to the requirements of Appendix E of the Co-ordination Code. This appears to remain at the same level during the third year of operation of section 74.
- 7.9.2** An analysis of the validity of the combinations of data codes that define the notice type, works type and works status indicates that the percentage for the gas sector remains consistently below 5% and for other sectors about 5%.
- 7.9.3** Notice sequencing remains a problem making it difficult for the receiving authority to determine whether it has received all notices sent by undertakers.
- 7.9.4** The percentages of unclosed works are low for the electricity and gas sectors but high for the telecom and water sectors, being highest for the water sector at 25%. The percentages showed a rise in January 2003 for all sectors. We believe that the percentages in the water and telecom sector are unacceptably high.

## **7.10 The Gazetteer**

- 7.10.1** There is little consistency between the gazetteers of sample authorities within the same class. One sample unitary authority has no Additional Street Data (ASD) records in its gazetteer, which should include the reinstatement category of each street.

## **7.11 General**

- 7.11.1** There is evidence that there has been some reduction in the average durations of works. Halcrow believe that there is still scope for further reductions in durations. While this can be achieved by proactive application of the scheme, there are continuing disincentives to its operation. Specific examples are the volume and complexity of the data, the absence of a



transparent invoice calculation mechanism, and the continued unwillingness of the undertakers to pay promptly against invoices for the charges owing.

## **8. Recommendations**

### **8.1 The Section 74 Scheme and supporting Regulations**

**8.1.1** Halcrow concludes that the Section 74 scheme, based on derivation of works durations from notices provided by the undertakers, remains fundamentally sound.

**8.1.2** The Court of Appeal, in the recent Leicestershire -v- Transco hearing, highlighted an anomaly in the regulations. Halcrow recommend that the Section 74 regulations are amended to correct this anomaly. The Court of Appeal also ruled that the deeming provision, relating to the continuation of works and calculation of overrun periods, is rebuttable. Halcrow recommends that the regulations are amended to ensure that a notice based scheme, as originally developed by the Department and HAUC, is fully supported by legislation. Halcrow recommends that an inspection based scheme for operating Section 74 is not adopted.

**8.1.3** It is clear, that regardless of the intent of the scheme, the financial consequence to undertakers will inevitably result in the legislation being challenged. Nevertheless, application of the scheme has produced real benefits and the continued use of the scheme should be encouraged.

### **8.2 Application of the Section 74 Scheme by Street Authorities**

**8.2.1** It is recommended that measures are implemented to ensure that the Section 74 provisions, where adopted by street authorities, are effectively applied. Halcrow does not suggest that the use of Section 74 should be mandatory as some authorities may wish to take a different approach to the management of streets works. For example, they may wish to apply the powers available through Section 59/60, Section 56 and Section 66 of the Act or even the Permit powers proposed within the Traffic Management Act.

**8.2.2** However, where the scheme is adopted by an authority, the application of the scheme should be rigorous. The proposed Network Management Duty included within the Traffic Management Act provides an opportunity for performance indicators to be implemented that would require an authority to demonstrate the effective use of Section 74, and other provisions within the NRSWA.

**8.2.3** We have previously highlighted the failure of authorities to provide sufficient resources for the management of street works. This lack of resource is something highlighted by authorities themselves but is also evident through, for example, the general poor quality and low update frequency of the National Street Gazetteer. Halcrow has no specific recommendation in respect of resource levels directed at the management of street works, but it is clear that Ministers intend to address the problem with the Traffic Management Act.

### **8.3 The Noticing Regime**

**8.3.1** The existing noticing regime requires a radical overhaul in order to fully support the operation of Section 74 and other street works functions (and the Network Management Duties).

**8.3.2** The Second Annual Report put forward a number of key recommendations relating to notification procedures, namely: overall simplification; clarification of rules; validation of systems, and; development of a functional specification. Many of the detailed suggestions

put forward were incorporated into the draft Third Edition of the 'Co-ordination' Code of Practice.

- 8.3.3** It is not known if it is intended that the Third Edition will eventually be published or whether a more comprehensive overhaul of the document is planned. The new legislation currently progressing through Parliament offers an excellent opportunity to address all of the existing problems and implement the necessary changes. Halcrow strongly recommends that this opportunity to update the noticing procedures is exploited.

#### **8.4 Highway Works**

- 8.4.1** The disparity between the requirements for the registration of highway works and the requirements for the notification of street works is clear to see.
- 8.4.2** It is recommended that the same parameters are used for both notification of street works and registration of highway works. Halcrow has previously recommended that, to achieve parity, the less onerous requirements currently applying to highway works should be applied to street works.
- 8.4.3** The Steering Group suggested that the common basis for notification and registration should be the current notification requirements for street works. The proposed Network Management Duty will make it essential for Street Managers to have access to information about all activities on the network. In the light of this, Halcrow now recommends that the notification requirements applying to street works are applied to the registration of highway works.

## APPENDIX A – Brief

**A1.1** In February 2001 Halcrow was awarded its commission to investigate the extent of street works and to assess the effectiveness of section 74 of NRSWA in reducing disruption. The following is an extract from the agreed scope of works that describes the objectives of the research and the scope of the Study.

The objectives of the research are: to:

- collect data held by highway authorities on the number of street works carried out in their area and their characteristics (including duration), and, based on this data, to produce a reliable picture of the situation in England as a whole;
- produce annual reports from 2001/02 to 2005/06, which report on the latest situation and identify changes in trends;
- using the data collected or otherwise, produce a first report by November 2001 which demonstrates how far the use of section 74 powers by highway authorities has lead to a reduction in the length of time taken to complete street works (and thus its effect on disruption) and a further report after section 74 has being in operation for a year.

The scope of the study was laid out as follows.

**A1.2** At the time of award, whilst there was no shortage of anecdotal evidence available as to the amount of disruption caused by street works, there was very little concrete evidence on the extent of street works throughout England, the length of time taken to complete works, or how often these exceed their planned duration. Therefore, Halcrow was expected to obtain reliable information on the extent of works, and based on this, to produce reports on an annual basis from 2001/02 to 2005/06 reporting on the picture nationally and mapping changes in trends.

**A1.3** In addition, the Department wishes to use the information obtained, supplemented by other means as necessary, to judge the effectiveness of the section 74 powers in reducing the time taken to carry out works. Halcrow was required to produce a report by November 2001 which explored how far the use of section 74 powers have been successful.

**A1.4** In order to allow highway authorities to administer the section 74 charging powers, the current Electronic Transfer of Notices (ETON) system was revised to allow undertakers to provide authorities with information, by means of electronic notices, as to the *actual* commencement and *expected* completion date of specific street works as well as the dates on which work was *actually* completed. This information will be used to calculate any charges to which utilities are liable. It was recognised as potentially a very valuable source of data on the national picture, which would allow the Department to determine the overall extent of street works and the success of the section 74 powers. Therefore Halcrow was expected to make extensive use of this material in the production of its reports.

**A1.5** Halcrow was not be expected to obtain information on the situation concerning street works in every highway authority area in the country. However, we were expected to establish a suitable regime for information gathering necessary in order to obtain a representative picture of the situation in England as a whole.

**A1.6** Depending upon the extent and quality of the information that is obtained, it was indicated that further analysis of the extent of street works could be required, for instance by breaking

the data down by different undertaker or type of works. The Study might also be extended to works carried out by highway authorities themselves, rather than simply those done by utilities. Ultimately, the issue was one of the amount of disruption caused by works, rather than simply the duration of those works.

## **APPENDIX B - Methodology for Study**

The following is the Methodology for the Study as approved by the Steering Group.

### **B1. Introduction**

- B1.1** Concern over the unnecessary disruption which utilities' street works cause led to the activation of section 74 of the New Roads and Street Works Act 1991 (NRSWA) on April 1<sup>st</sup> 2001. S74 gives highway authorities (LHAs) powers to charge undertakers (SUs) where works are not completed within an agreed period.
- B1.2** DfT (then DTLR) has appointed Halcrow to obtain clear tangible evidence of the scale of utilities' street works in England, and the effectiveness of s74 in reducing disruption. As a secondary task, they would look to develop methods to assess the extent and duration of highway works.
- B1.3** A Steering Group of representatives from the SUs and LHAs has been set up to assist in this study.

### **B2. Proposed approach**

- B2.1** This methodology is based on the project specification, but took into account subsequent discussions between DTLR and Halcrow and with representatives of utilities and highway authorities.
- B2.2** The primary source of data for determining the scale of street works in England and monitoring the effect of s74 is historical and current ETON records. Other data sources would include the internal notice management systems operated by street authorities and works management systems operated by undertakers.
- B2.3** Two questionnaires have been circulated - one to all LHAs and one to all SUs, seeking information on their approach to implementing s74 and on what data held by them could be used for the project. In the light of the responses received to the questionnaires, the key performance indicators to be used to calculate the effect of the s74 powers were finalised. Highway authority and utility representatives on the Steering Group would be given an opportunity to comment on the proposed indicators. In addition, a representative sample of LHAs would be selected, for monitoring in more detail to obtain an accurate picture of the scale of street works and the effect of the new s74 powers.
- B2.4** Analysis would also be done of changes in policy, working methods and site control made by undertakers in order to reduce the potential for overruns. These are likely to be obtained by questionnaires, interviews and workshops.

### **B3. Questionnaires**

- B3.1** The LHA questionnaire aimed, amongst other things, to discover whether LHAs:
- operated electronic notice systems, or still receive paper notices, and from whom;
  - intended implementing s74, &, if so, what their policy on its active management will be and what approach they will take to undertakers' estimated duration of works;
  - operated local notice management systems and, if so, how they use them;

- had recent historical data relating to duration of works for different work types;
- were prepared to supply copies of notices (electronic and paper) to the study team.

**B3.2** The questionnaire to SUs was intended to determine whether, following the introduction of s74, they:

- had altered their policy towards estimating duration;
- had altered the number of streets included within multi-street works;
- had a policy for treatment of challenges to their estimates;
- had or would alter their policies for works management & contract procurement.

## **B4. Data Acquisition**

### **B4.1 Historical and Current ETON Records**

These were expected to form the most reliable source of available data. An internal study database was being created for this project, in which the ETON data fields would be replicated. This database would then be populated electronically by the transfer into it of valid raw ETON records.

### **B4.2 Notice Management Systems**

These are systems used by LHAs to manage information derived from the raw ETON data that they receive on their FTP servers. These may include information on pre-s74 works that would help to flesh out the data that exists prior to 1<sup>st</sup> April 2001.

### **B4.3 Work Management Systems**

These are the internal systems used by most undertakers to manage their works and contracts. These may also provide valuable additional data on the pre-s74 situation.

### **B4.4 Processing and Analysis of the Data**

Processing and analysis of the data acquired would be the task of Halcrow.

## **B5. Selection of representative sample for monitoring purposes**

### **B5.1 Analysis of the Questionnaires**

Following the analysis of the questionnaires, a representative sample of authorities operating s74 will be selected for monitoring in more detail.

### **B5.2 London Boroughs**

London Boroughs are likely to represent a special case, given the scale of works in the capital. It is envisaged that about 5 “inner” and 5 “outer” London authorities that are operating the s74 powers would be monitored.

### **B5.3 Other Street Authorities**

It was proposed to select around 5 authorities each from the ranks of metropolitan boroughs, unitary authorities and county councils.

## **B5.4** Control Authorities

In order to eliminate bias as far as possible, it was proposed to set up a control group of authorities which are not currently operating s74.

## **B5.5** Selection Factors

In selecting both control and section 74 adopting authorities, the following factors, amongst others, would be taken into account:

- whether they border authorities not operating s74;
- whether they have a substantial urban street network;
- whether they have a rural road network where there is sensitivity to delay;
- whether they have a high level of street works activity in their area.

## **B5.6** Highways Agency (HA)

Should the Highways Agency decide to implement s74 in the future, its notices would form a valuable data resource, as they reside on a central FTP server. The HA had, therefore, been asked to make them available.

## **B5.7** Transport for London (TfL)

TfL had not yet set up its own FTP server, and all the current notices related to its streets are held on a number of other authorities' street works registers. It is not, therefore, proposed to use its data at present.

## **B5.8** Sample Authorities

The sample authorities that have agreed to provide data monthly for the Study since its inception are as follows:

<b>Classification</b>	<b>Highway Authorities</b>
County Councils	Devon, East Sussex, Gloucestershire, North Yorkshire, Nottinghamshire
Inner London Boroughs	Greenwich, Hammersmith and Fulham, Kensington and Chelsea, Newham, City of Westminster
Outer London Boroughs	Barking and Dagenham, Bexley, Bromley, Croydon, Harrow
Metropolitan Authorities	Coventry, Doncaster, Kirklees, Leeds, Newcastle upon Tyne
Unitary Authorities	Bath and NE Somerset, Bristol, City of Derby, York, City of Nottingham



## **B6. Measurement of the Effectiveness of section 74**

**B6.1** The indicators to be used to measure the effectiveness of s74 were finalised once it was clear what monitoring data could be obtained from LHAs and SUs. These were as follows.

### **B6.2 Indicators of the Extent of Street Works**

- (i) Number of days of works
- (ii) Number of works
- (iii) Number of excavations
- (iv) Area excavated per works

The trend in all of the above would be shown on a monthly basis if possible.

### **B6.3 Indicators of the Effectiveness of section 74 in Reducing Unnecessary Disruption**

- (i) Average duration of works
- (ii) Number of days of overrun and percentage overrun
- (iii) Percentage of works that are overestimated and percentage of overestimate

## **B7. Highway Works**

**B7.1** As well as their primary remit of monitoring the scale of street works and effect of s74, the study team would also develop methods to assess the extent and duration of highway works. They would document mechanisms used by LHAs for notifying undertakers of proposed start dates, durations, locations and extent of works, and the extent to which undertakers take account of known highway works when scheduling their own planned works. As there is no standard for the measurement of the extent of highway works, parameters would need to be drawn up and agreed.

## **B8. Outputs**

**B8.1** A report assessing the effect of the introduction of the s74 powers in the first half of 2001/02 was due to be produced by the end of 2001. A further report would follow in May 2002 covering 2001/02 as a whole. At around the same time, a report will be produced with the results of the investigation into the scale of street works across England in 2001/02. A further report on the latter would follow in May 2003, covering 2002/03. In addition, the Department will report to the quarterly national HAUC meetings on the progress of the study, as well as to the Steering Group.

## APPENDIX C - Record of Notices Received from Sample Authorities

### C1. Record of Notices Received up to April 2004 from the Sample Authorities

Name of Authority	Apr 03	May 03	Jun 03	Jul 03	Aug 03	Sep 03	Oct 03	Nov 03	Dec 03	Jan 04	Feb 04	Mar 04	Apr 04
Barking & Dagenham (LB)	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Bath - North East Somerset	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
Bexley (London Borough of)	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Bristol City Council	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Bromley (London Borough of)	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Coventry City Council	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Croydon (London Borough of)	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓		
Derby City Council	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
Devon County Council	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Doncaster	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
East Sussex County Council	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Gloucestershire County Council	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Greenwich (London Borough of)	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Hammersmith & Fulham (LB)	✓	✓	✓	✓	✓	✓	✓	✓					
Harrow (London Borough of)	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Kensington & Chelsea (RB)	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Kirklees Metropolitan Council	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Leeds City Council	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Newcastle upon Tyne City Council	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Newham (London Borough of)	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
North Yorkshire County Council	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Nottingham City Council	✓	✓	✓	✓	✓	✓	✓	✓					
Nottinghamshire County Council	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Westminster City Council	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
York (City of) Council	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

## **APPENDIX D - Data Quality and Verification of Notices**

### **D1. Introduction**

**D1.1** The principal source of data for the Study is the supply of notices on a monthly basis from the sample authorities. The information in these notices has been checked for conformity with the regulations and Appendix E of the Co-ordination Code, and for consistency of information. A number of issues concerning the data are set out in this Appendix.

### **D2. Authorities – Storage and Transfer of Electronic Notices for section 74**

**D2.1** Halcrow has requested that only copies of the original notices sent by the undertakers should be provided for analysis. However, a number of authorities have sent Halcrow copies of the notices after they have been processed by their notice management systems. These systems then create up to four storage areas into which they transfer the processed notices i.e. the original notices, those failing the authority's system validation, those passing it, and those that only partially fail, and some notices may exist in all four states. This is not consistent for all sample authorities, and a check for the presence of multiple copies has had to be carried out.

**D2.2** Each ETON batch file has a unique filename based on the Utility reference code and the date and time of creation. Halcrow maintains a reference table of all files processed. Each batch processed is automatically checked against this reference list to identify and reject duplicates.

### **D3. Data Quality**

**D3.1** Data quality problems were identified in the previous report, among these many batches of notices that did not comply with the Code of Practice. It was agreed that the problems needed quantifying, and to this end Halcrow developed proposals to develop some performance indicators to provide a measure of data quality.

The following performance indicators were considered:

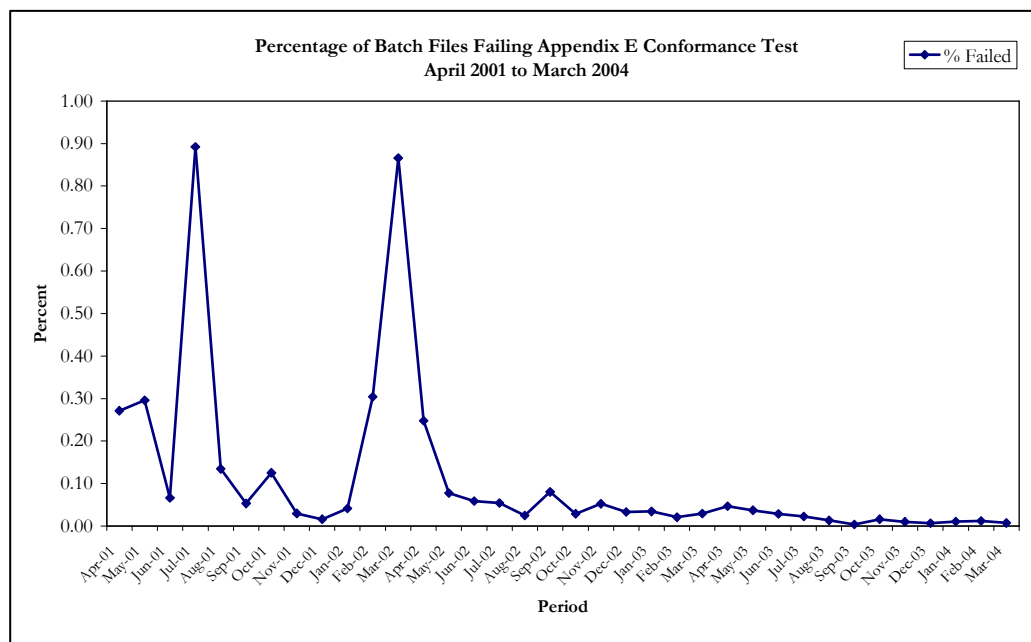
- Percentage of non-conforming files;
- Percentage of invalid code combinations;
- Percentage of works where notices are incorrectly sequenced.

The number of 'unclosed' works was also felt to be a significant issue, meriting its own performance indicator. In addition, the number of notices issued per works, although not an indicator of data quality, was felt to provide a useful indicator of the complexity of any noticing regime.

#### **D3.2 Non-Conforming Files**

Halcrow have developed a validation routine within the data loader software to check a file's conformance with the requirements of Appendix E of the Co-ordination Code both as regards the structure of the batch file and individual field values.. The files with invalid structures (i.e. invalid record counts etc.) are rejected but those with invalid field values are used within subsequent analysis of the data where the non-conformity would not affect the results.

The following chart indicates the level of non-conformance of files on a monthly basis.



The residual level of failure has decreased and is now insignificant i.e. less than 0.01% since April 2003.

### D3.3 Valid Code Combinations

The Appendix E notifications carry three very important data fields that describe the function the notice is performing. These fields are:

- Notice Type
- Works Type
- Works Status

Halcrow has identified during the analysis of data that these codes were sometimes being used in inappropriate combinations and felt that the analysis of these code combinations could provide a useful indicator to the quality of data being supplied by the statutory undertakers. This analysis is additional to the validation defined in D3.2. This analysis may also be useful while reviewing the Coordination Code or if validation checks are to be specified for future updates of user software.

The analysis was undertaken by first establishing a defined set of 'valid' code combinations based on the noticing rules contained within the Code of Practice. A total of 131 valid code combinations were defined (out of a possible number of combinations in excess of 800). The data received by the sample authorities was then matched against the defined values to identify invalid code combinations. The data was analysed from 01-April-2001 to 31-March-2004. The following table summarises the results obtained:

**Table D1 - Valid Utility Code Combinations**

1 April 2001 to 31st march 2004		%age of all notices	%age of valid notices
number of "valid" combinations	131	94%	100%
Number of combinations used and %age of notices covered	6	50%	54%
	15	75%	80%
	34	90%	93%
Valid combinations not used	1	0%	0%

The findings show that:-

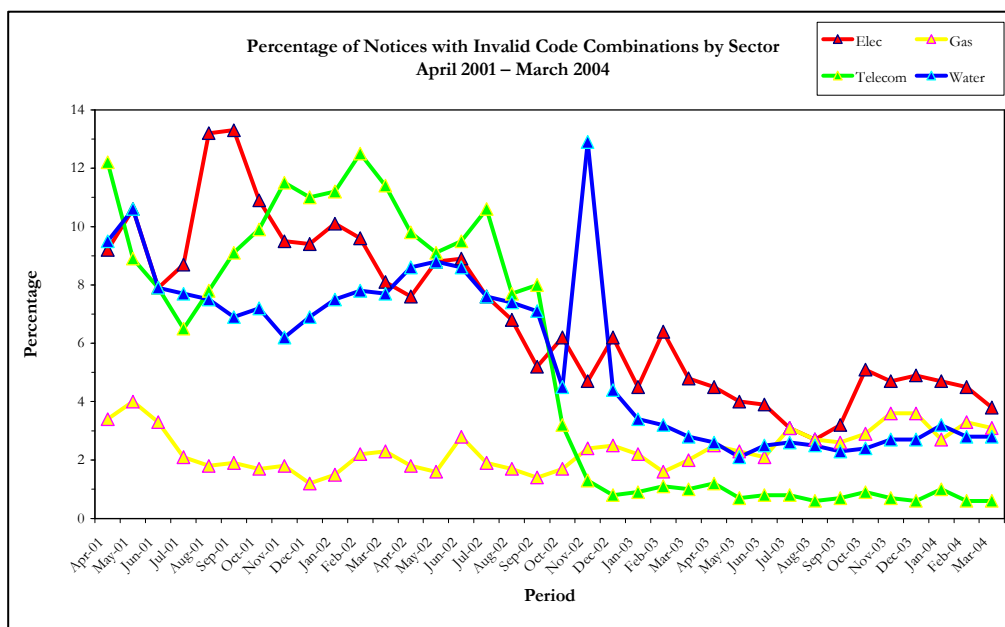
- 490 code combinations have been used over the 3 year period.
- 6 code combinations cover over 50% of valid notices.
- 34 code combinations cover over 90% of valid uses.
- 43% of invalid combinations are covered by 3 combinations of notice type, works type and works status. These mainly relate to advance notice being given for Minor works and incorrect use of the Abandoned Works status

It should be noted that no analysis of data relating to the period prior to 01-April-2001 has been undertaken, as changes to the noticing rules would make the comparison with later periods meaningless.

It is noted that the use of some invalid code combinations has changed throughout the monitoring period.

The decision on which combination to use has been left with the operator of the system. It would appear that a lack of understanding and training amongst operators is one contributory factor to invalid notice combinations together with some vagueness in the Coordination Code. The other factor is that the notice management systems being used have not been designed to reject erroneous use of code combinations and this allows invalid notices to be prepared.

The overall percentage of invalid code combinations used has generally reduced although there is a recent increase from September 2003 in the electricity, gas and water sectors (see chart below)



From the above evidence we believe the recommendations from the Second Annual Report should remain namely:

- The introduction of a mandatory training programme for all people involved in street works administration
- That the number of code combinations is reduced and the removal of works type and status is investigated, possibly by a small increase in works notices
- That a standard validation test of all EToN software is introduced such that the software enforces compliance with the Code of Practice and regulations, and data meets criteria that are specific to each file type.

### D3.4 Notice Sequencing

Halcrow believe that for the notice management process to work effectively the notices received must be logical both in respect of the content of an individual notice and in the way notices for a particular works relate to each other.

Examination of the code combinations and the sequences that are used revealed a significant variance across utilities. It would appear that this is not just a factor of the interpretation of the Regulations and the Code of Practice by the utility sector. The notice management systems being used are not configured to reject erroneous use of code combinations and sequences. This allows invalid notices to be prepared.

Halcrow feel that, considering the variance of noticing regimes, there is limited value in producing performance indicators based on adherence to any particular set of defined code combinations and sequences. It is however felt that defining a standard set of code combinations and sequences for use by the system developers would be of great benefit to the street works community.

### **D3.5 Unclosed Works**

The dates given in the notices have been analysed in order to estimate total durations and periods of overrunning for those works provided by the sample authorities. It is clear from table D2 below that the results are being distorted by the presence of large numbers of unclosed works. Investigation shows that these are often works “started” by a Whereabouts notice but then not followed up i.e. allowed to lapse.

Another significant proportion contains works that have had final reinstatement recorded but are then not closed.

Because our processing makes use of any actual completion date to maximise available information these unclosed works do not unduly affect the overall numbers or durations of Works.

(The apparent increase in March 2004 and to a lesser extent in February is because of notices still to be received in subsequent months for longer Works).

**Table D2:- Percentage of Works Not Closed by Sector April 2001 to March 2003**

Month	Elec	Gas	Telecom	Water	All
Apr-01	12	3	8	11	9
May-01	4	2	5	9	6
Jun-01	4	3	5	9	6
Jul-01	5	4	6	10	7
Aug-01	5	3	5	10	7
Sep-01	4	1	5	9	6
Oct-01	3	2	5	10	6
Nov-01	3	2	4	8	5
Dec-01	2	2	5	8	5
Jan-02	4	2	2	8	5
Feb-02	2	1	2	7	4
Mar-02	3	2	3	7	4
Apr-02	3	1	3	7	4
May-02	2	1	3	6	4
Jun-02	2	1	4	6	4
Jul-02	3	1	3	7	4
Aug-02	2	1	2	7	4
Sep-02	4	1	4	9	6
Oct-02	3	2	4	9	5
Nov-02	3	1	5	7	5
Dec-02	2	1	3	9	5
Jan-03	2	1	3	8	4
Feb-03	2	1	5	9	5
Mar-03	3	2	7	8	6
Apr-03	2	1	6	10	6
May-03	3	1	7	9	6
Jun-03	3	2	6	9	6
Jul-03	3	2	3	8	5
Aug-03	5	3	4	10	6
Sep-03	3	2	4	8	5
Oct-03	4	3	9	10	8
Nov-03	6	3	11	11	8
Dec-03	9	6	15	12	11
Jan-04	4	4	11	11	9
Feb-04	6	4	14	16	11
Mar-04	6	5	16	17	12

The above data shows that unclosed works appear to remain in the Registers although this may indicate complacency relating to closure notices where occupation of the highway has ceased (Although Works “started” on a Whereabouts Notice can be left to “lapse”) . The residual level of unclosed works even after one or two years indicates a possible lack of coordination between the Utilities and Authorities.



### D3.6 Numbers of Notices per Individual Works

An analysis of the data provided by the sample authorities indicates the following:

**Table D3 - Number of Notices per Works**

An analysis of the data provided by the sample authorities indicates the following:

No of Works with n- n Notices	Elec	Gas	Telecom	Water
1 - 5	112,000	114,806	122,877	268,405
6 - 10	12,369	22,414	10,664	48,663
11 - 20	1,452	3,424	792	9,603
21 - 50	299	485	43	775
> 50	16	38	2	113
Total No of Works	126,136	141,167	134,378	327,559
Total No of Notices	460,743	631,286	440,512	1,267,294

Our comment is that overall 10% of works have between 6 and 10 notices per works (nearer 15% in the gas and water sectors). This is a very high number of notices and could inhibit co-ordination. Initial investigation indicates that this proliferation of notices is partly caused by issuing “works clear” notices to cancel works for which “daily whereabouts” notices have been sent, but the works have then been rescheduled. Our comment again is that a highway authority would find this extremely difficult to co-ordinate. On the other hand it is an indication of the lack of clarity in the Code of Practice on how to handle such situations.

# APPENDIX E - Third Questionnaire to the Authorities

## E1. Introduction

A third questionnaire was issued to highway authorities in order to update information on the way in which authorities were applying section 74. This information had originally been obtained using a second questionnaire circulated to 126 authorities in 2002.

All responses from the second questionnaire were analysed in Appendix E of the Second Annual Report. They included information on the application of the various statutory powers for control of access to the highway, and the approach to charging for overstay as a result of street works. Only highway authorities were requested to complete a questionnaire.

## E2. Third Questionnaire

The third questionnaire repeats many of the questions of the second questionnaire. The contents are as follows:

- (i) Name of Authority and Group i.e. whether County Council, Metropolitan Authority, Unitary, Inner London Borough or Outer London Borough
- (ii) Approach to challenging undertakers' estimated durations of works (i.e. do not challenge at all OR challenge occasionally OR review most works and challenge when appropriate OR review all works and challenge when appropriate OR always challenge)
- (iii) In each utility sector the name of the utility that carries out the most work and estimate of percentage (percentile)
- (iv) number of section 74 challenges made in 2003 to the utility performing the most works (by individual sector)
- (v) number of section 56 directions given in 2003 to the utility performing the most works (by individual sector)
- (vi) number of section 66 notices sent in 2003 to the utility performing the most works (by individual sector)
- (vii) number of defective reinstatements recorded in 2003 for the utility performing the most works (by individual sector)
- (viii) the authority's perception of the extent of the reduction in disruption from street works following the introduction of section 74.
- (ix) annual cost of operation of section 74 broken down by staff cost, system cost and other costs
- (x) whether the authority has improved its Notice Management System
- (xi) whether the Notice Management System provides the right tools for street works management (authorities could answer either "yes" OR "no with minor failings" OR "no with major failings")

- (xii) the amounts invoiced and recovered in 2003 by utility sector
- (xiii) whether any differences in approach towards execution of their street works has been noted as a result of the outcome of the recent Leicestershire County Council vs Transco hearing
- (xiv) whether any problems have been experienced as a result of applying s74

The questionnaire, as shown above, was issued in electronic format to 101 authorities that had responded to the second questionnaire issued in December 2002 for the Second Annual Report. Of these 88 replied i.e. a response rate of 87% which is considered to be excellent.

The numeric values in the questionnaire all related to the period 1 January 2003 to 31 December 2003.

### **E3. Purpose of the Questionnaire**

The questionnaire was intended to provide information on the following for comparison with the responses that were documented in the Second Annual Report:

- (i) The general approach taken by street authorities to ‘challenging’ estimated durations submitted by undertakers under the section 74 scheme and the number of challenges being made;
- (ii) The use of other powers available under the Act particularly the power to direct timings as given under section 56 and the power to take action to discontinue disruption caused by street works available under section 66;
- (iii) To gauge the perception, from a street authority perspective, of how the section 74 scheme is operating and identify any particular issues that are causing problems;
- (iv) To assess the suitability of the existing computer systems that are in place to manage the section 74 scheme; and
- (v) To make an assessment of the amounts invoiced and recovered under the scheme.

One year on this comparison should provide pointers as to the level of confidence in the use of the powers, and the general response from the utilities.

### **E4. Summary of Responses**

#### **E4.1 Approach to Section 74 and Number of Challenges**

Respondents were asked to describe their approach to challenging undertakers’ estimated durations of works by selecting an answer from a pre-defined list.

The following table gives summary of the percentages responding against each of the defined answers;

<b>Approach</b>	<b>Count</b>	<b>%</b>
Don't challenge at all	6	7
Only challenge occasionally	31	35
Review most works and challenge where appropriate	23	26
Review all works and challenge where appropriate	26	30
Always challenge	2	2
No response	0	0

In addition respondents were asked to specify the number of challenges made in the previous year (2003) broken down by utility sector. Overall some inconsistencies have been noted from the responses and our comments are summarised as follows:

No challenges	25 authorities (28%)
< 10 challenges	32 authorities (37%)
<100 challenges	57 authorities (67%)
Between 100 and 400 challenges	17 authorities (19%)
Over 400 challenges	14 authorities (16%)

In each sector the responses indicate the following:

<b>Sector</b>	<b>Less than 10 Challenges (Number of authorities)</b>	<b>More than 100 Challenges (Number of authorities)</b>
Electricity	38 (40%)	4
Gas	38 (40%)	23
Telecom	55 (62%)	5
Water	47 (53%)	10

If individual sectors are considered the number of authorities making less than 10 challenges is still is high in percentage terms.

We believe the number of s74 challenges to be reducing. The average number of challenges per authority in 2002 was reported as 267. In 2003 that number is estimated as 218.

#### E4.2 Number of section 56 and 66 Notices Issued

Average Number of	Elec	Gas	Telecom	Water	All
S56 Notices Issued	7	11	8	14	40
S66 Notices Issued	1	1	1	1	4

The average number of directions issued under section 56 was reported as 51 in the Second Annual Report but is estimated at 41 from the responses.

It is noted that 50% of authorities did not issue any directions in 2003. 70% of authorities issued less than 10 during the year.

The average number of section 66 notices issued is 3 and one authority issued a total of 68. As with challenges and directions many of the figures were rounded indicating that they were estimates. Only 25% of authorities questioned had issued a section 66 notice during 2002.

#### E4.3 Number of Defective Reinstatements

The average number of defective reinstatements by sector has been estimated from the responses and is as follows.

Average Number of Defective Reinstatements	Elec	Gas	Telecom	Water	All
	83	97	82	218	480

We believe that this corresponds with the number of works carried out by this sector in relation to other undertaker activity on the highway.

Further analysis of the incidence of defective reinstatements by sector is reported in Appendix F (Section F3.4).

#### E4.4 Perception of the effects of section 74 in reducing disruption

53 out of 88 authorities i.e. 60% felt that section 74 has not reduced disruption. The remaining 40% of authorities perceiving a reduction in disruption was analysed by the approach they were taking (Section E4.1 above) with the following results:

Approach	% of Authorities who Perceived a Reduction in Disruption
Don't challenge at all	50
Only challenge occasionally	90
Review most works and challenge where appropriate	61
Review all works and challenge where appropriate	88
Always challenge	50

Although based on 'perception' this table does show a correlation between the positive effects of section 74 and the approach taken by the authority to challenging estimated durations.

#### E4.5 Expenditure on Operation of section 74

The responses indicated a wide disparity in expenditure on staff and systems.

The range of expenditure on **staff** is as follows:

Expenditure on Staff (£)	No of Authorities
>300,000	1
100,000 – 150,000	4
50,000 – 100,000	12
10,000 – 50,000	21
0 – 10,000	6
0	29
No Response	16

The large number of responses reporting no expenditure on staff to operate section 74 is surprising and may be as a result of consideration of the management of street works as a part time activity within those authorities. There is some inconsistency in the responses because within these 29 authorities the breakdown in terms of approach to challenging is as follows:

Always challenge	1
Review all notices and challenge where appropriate	11
Challenge occasionally	11
Do not challenge	6

It is difficult to determine how challenges can be made without appropriate staff allocation, particularly in those instances where the extent of the road hierarchy to be managed is large.

The range of expenditure on **systems** is as follows::

<b>Expenditure on Systems (£)</b>	<b>No of Authorities</b>
>50,000	2
10,000 – 15,000*	7
5,000 – 10,000	7
2,000 – 5,000	17
0 – 2,000	7
0	26
No Response	21

Again the largest number of responses (26) indicated that no expenditure on systems had been made in 2003.

Respondents may have taken the question to imply that it referred only to purchases of new systems or upgrades, as 12 of the 26 authorities referred to above indicated that they had improved their system in 2003.

#### **E4.6 Adequacy of Notice Management Systems**

Overall 36 responses ( 41%) indicated no improvement to systems. The majority of authorities (59%) stated that they had improved their systems in some way in 2003.

However in spite of these improvements most authorities again claim that their notice management systems do not provide the functionality that they require in order to manage street works. The statistics are as follows:

System provides adequate functionality	26%
System has minor failings	53%
System has major failings	21%

These are identical to the ratios reported in the second Annual Report and indicates a continuing dissatisfaction with systems capability, perhaps as the perception of what is required has improved.

#### **E4.7 Invoice Amounts and Recovery**

Further detailed information on invoicing was requested from all authorities including breakdown by individual utility company from January 2003 to December 2003.

Responses have been obtained from 35 authorities.

The following table summarises the information gathered;

<b>Amount Invoiced</b>	<b>£15,640,000</b>
<b>Amount Recovered</b>	<b>£4,802,000</b>
<b>Percentage Recovered</b>	<b>31%</b>

As a comparison, for the second Annual Report 78 authorities replied with the following outcome.

<b>Amount Invoiced (2002)</b>	<b>£62,023,900</b>
<b>Amount Recovered (2002)</b>	<b>£6,971,242</b>
<b>Percentage Recovered (2002)</b>	<b>11%</b>

Further discussion is included in Section 4.6 of this Main Report but it is worth reiterating that in 2002 only four authorities recovered 100% of their invoiced amounts whereas in 2003 11 authorities reported that they had recovered 100%.



#### E4.8 Problems experienced with the application of the section 74 scheme

The questionnaire again provided an opportunity for respondents to highlight problems and issues associated with the application of the section 74 scheme. There were common themes to these problems and issues that were identified from the Second Annual Report. These have been used again as they fit the general profile of comments in the 2003 questionnaire, and also for comparison with the outcomes from the 2002 questionnaire.

Problem/Issue Identified	% of authorities 2003	% of authorities 2002
Undertakers Generally Avoid Payment	60	50
Inadequate/Misleading Noticing by Undertakers	45	37
Undertakers Refuse to Pay 'Admin Errors'	35	34
Undertakers Non-responsive/Non-cooperative	40	33
System is too Time Consuming	10	18
Lack of Clarity over 'Admin Errors'	17	17
Authority has Lack of Resources	15	17
NRSWA Legislation is Unclear	20	17
Undertakers Require Evidence of Overruns	30	14
Complexity of System/System Failure	4	13
Undertakers Frequently Request Extensions	12	12
Multiple/Back-to-back Noticing by Undertakers	15	9
No Noticing by Undertakers	5	9
Estimated Durations are Excessive	5	7
Undertakers Do Not Acknowledge or Accept Challenges	4	6
No problems	3 authorities	-

The above table shows an increase in the perception of specific problems by the authorities. These relate to incorrect notification, avoidance of payment and issue of misleading notices on the part of the utilities. There is a significant rise in the number of respondents that identified the demand for evidence by the utilities as a problem, although there is no requirement in the regulations for this.

#### E4.9 Changes in Approach Following Leicestershire CC vs. Transco Judgement

Respondents were asked whether the approach of the utilities towards the general operation of section 74 had changed following the Court of Appeal's finding in favour of Transco.

A summary of the responses is as follows.

NO	Authority has always been generally satisfied with the approach of the utilities in relation to the operation of section 74.	46 authorities  (52%)
	Authority believes that the approach of the utilities is no worse than it already was and the same levels of claims for admin errors i.e. although the works are complete, the utility submits a late notice	
YES	Authority is dissatisfied with the approach of the utilities in relation to the operation of section 74.	42 authorities  (48%)
	Authority believes that the approach of the utilities is worse than it already was prior to the judgement and that there is an increase in the level of admin errors claimed.	

Most of the authorities that opted to respond "No" indicated that the utilities had always claimed administrative errors. 11 authorities indicated that they had discussed and agreed draft amounts to be invoiced and that these were then paid without the amounts being contested.

# APPENDIX F - Second Questionnaire to the Utilities

## F1 Introduction

This is the second questionnaire issued to utilities regarding their response to section 74. The information gathered in the first questionnaire, which was issued at the commencement of the study, was considered to be out of date. A second questionnaire had not been issued to the utilities prior to the development of the Second Annual Report because it was considered that some information on the perception of the authorities should be obtained and analysed first. Checks on the utilities' interpretation and operation of section 74 as obtained from the responses to this questionnaire could then be carried out later by means of a follow up questionnaire.

## F2 Second Questionnaire

The questions put to the utilities in the second questionnaire were as follows:

- (i) The approach towards handling challenges from Statutory Undertakers regarding the Estimated Durations of Works submitted by the utility through notices
- (ii) Number of section 74 challenges received in 2003
- (iii) Number of section 56 directions received in 2003
- (iv) Number of section 66 Notices received in 2003
- (v) Number of your defective reinstatements notified in 2003
- (vi) Whether a reduction in overall durations has been achieved by the utility following the introduction of section 74
- (vii) Whether a reduction in overruns has been achieved by the utility following the introduction of section 74
- (viii) Whether the Notice Management System used by the utility provides all the necessary tools to enable the effective management of street works
- (ix) The amount invoiced in section 74 charges in 2003
- (x) problems experienced by the utility in meeting section 74 requirements in 2003

This questionnaire effectively mirrors many of the questions in the questionnaire to the authorities (Section E2 Appendix E). It was issued through the National Joint Utilities Group (NJUG) to all its member utilities. Responses were received from 34 utilities as follows:

Electricity sector	7
Gas	1
Telecommunications	4
Water	19

## F3 Summary of Responses

### F3.1 Approach towards handling Challenges to Durations of Works

Most of the undertakers (over 90%) claim that they negotiate with the authority that challenges a section 74 estimated duration. 7% of responses indicated that they either disputed or ignored the challenge. The high percentage of those utilities that negotiate is possibly helped by the general low level of section 74 challenging on the part of the authorities.

### F3.2 Number of section 74 Challenges Received

The responses to this question contained a significant variation in the number of challenges recorded per utility. This is summarised in the table below.

Blank response	5 (includes national telecommunications provider)
No challenges	4 (3 water, 1 electricity)
< 10 challenges	5 (3 water, 2 telecom)
10 - 100 challenges	7 (4 water, 1 electricity)
100 - 500 challenges	5 (3 water, 2 telecom)
Over 500 challenges	5 (2 water, 2 electricity, 1 gas utility) *

(\* We have received one response from a gas utility that operates nationally and has provided an overall total of 15,000 challenges received. While the total appears to be an approximation as it is a rounded value, it represents an average of 100 challenges for each of the 150 authorities in England. This compares well with the responses from the authorities which indicate that the majority challenge less than 100 times per annum across all sectors.)

50% of the utilities that responded experience 100 challenges or less per annum. Of those who reported more than 500 challenges in 2003, one energy utility that operates throughout London and the South East reported 3,420 challenges, and one water company operating throughout the Midlands reported 2,348 challenges. It appears that the numbers of challenges reflect the number of authorities within whose boundaries those utilities operate, and not on the rigorous application of section 74 by any one authority.

### F3.3 Number of section 56 and section 66 Directions Received

The number of section 56 and section 66 directions received by the utilities are as follows>

Number of Directions Reported	Section 56 Directions	Section 66 Directions
Blank response	6 utilities	6 utilities
None	9 utilities	17 utilities
< 10	7 utilities	6 utilities
10 - 100	4 utilities ( 3 with < 15, 1 with 90)	1 utility (water utility operating in SE England with 50)
100 - 500	4 utilities	1 utility (national gas utility with 175)
Over 500	1 utility (national gas utility with 750)	None

The number of section 56 and section 66 directions appears to be low with 22 utilities receiving less than ten section 56 directions each, and 17 utilities receiving no section 66 directions. The national gas utility received on average five section 56 and one section 66 direction per authority.

This confirms findings from the survey of authorities that the use of existing powers to control occupation of the highway by utilities is low.

### F3.4 Number of Defective Reinstatements

The annual incidence of defective reinstatements as obtained from the notices is very low perhaps because utilities may be notifying these incorrectly as new works. We have attempted to obtain an estimate of the number of occurrences by sector from our survey of the utilities and the authorities.

The number of defective reinstatements as reported by the utilities have been grouped as follows.

Blank response	8 utilities
None	None
< 10	1 utility
10 – 100	1 utility
100 – 500	7 utilities
500 – 1,000	4 utilities
> 1,000	10 utilities

Again the greatest number of defective reinstatements are reported by those utilities that operate either nationally (one gas utility) or in areas controlled by a number of authorities.

The survey of the authorities (Appendix E) indicates an average number of such reinstatements as about 100 ( $\pm 50\%$ ) for each of the electricity, gas and telecom sectors and 230 for the water sector. These have been confirmed for the gas sector from the returns from the national gas utility.

While we do not have enough information to compare data for the electricity and telecom sectors, for the water sector we have compared the information provided by five authorities in the North (3 metropolitan boroughs, 1 unitary authority, and one county council) with that provided by the water utility whose customer base is almost totally within these authorities. The incidence of defective reinstatements reported by these authorities is as follows:

Authority 1    285

Authority 2    229

Authority 3    146

Authority 4    160

Authority 5    190

The total number of defective reinstatements for these 5 authorities is 1,010.

The water utility reported a total number of such reinstatements for 2003 as 1,400 in round figures which can be compared with the total reported by the authorities.

As we have data for 2003 only we cannot determine whether the number of defective reinstatements has risen. However we would have expected that the authorities would have commented on an increasing trend if this were present.

The annual number of works is estimated at 1.2 million per annum. The number of defective reinstatements per annum is approximated to 75,000 for 150 authorities (500 per authority per annum).

**The ratio of defective reinstatements to annual works for 2003 is estimated at 6.25%.**

### **F3.5 Achievement of Reduction in Overall Durations and Overruns**

The utilities were equally divided in their opinion as to whether a reduction in overall durations had been driven by section 74. requirements. 48% stated that they had achieved a reduction; an equal percentage stated that there had been no change; and the rest did not respond to the question.

60% of utilities i.e. the majority, claimed that they had reduced the incidence of overruns of their works.

Our findings from the copies of the notices are that overall durations have reduced and that the incidence of overruns has reduced because of the policies of re-estimating by the utilities (Section 4.3 – 4.5 of this Volume).

### **F3.6 Adequacy of Notice Management Systems**

66% of utilities that responded reported that their system works effectively.

Of these utilities, 40% have developed in-house systems, while the other 60% of this group commented that they had undertaken extensive enhancements in order to meet their needs.

Of the 34% of utilities that reported that their system did not provide the tools that they required, all had purchased a system, and all commented that the selected system was found to be orientated towards the needs of highway authorities.

### F3.7 Amount Invoiced in 2003

A significant variation has been found in the amounts invoiced by the authorities as reported by the utilities.

Electricity	7 utilities report amounts invoiced as:  £1,100 ; £79,300 ; £168,000 ; £250,000 ; £768,000 ; £1.1 million ; £13.8 million
Gas	National utility reports £15 million invoiced (£100,000 per authority)
Telecommunications	4 utilities (1 national) report amounts invoiced as:  £12,500 ; £44,000 ; £176,450 ; £463,000 (from national utility)
Water	19 utilities reported as follows:  3 blank responses  < £10,000 invoiced - 3 utilities  £10,000 to £50,000 – 4 utilities  £50,000 to £100,000 - none  £100,000 to £200,000 – 3 utilities  £200,000 to £300,000 – 1 utility  £300,000 to £400,000 – 1 utility  £400,000 to £500,000 – 1 utility  £500,000 to £600,000 – none  £600,000 to £700,000 – 1 utility  £700,000 to £800,000 – 1 utility  <b>£11 million – 1 utility</b>

The utilities in the electricity and water sectors that incurred high invoices both operate throughout the Southeast.



### F3.8 Problems Experienced with the Application of the section 74 Scheme

A number of common themes emerged in the analysis of the response of the utilities to this question that have been listed below.

<b>Problem/Issue Identified</b>	<b>% of utilities 2003</b>
Contractors are very inexperienced in requirements of section 74	12
Significant differences in approach by the authorities	10
IT problems including communications with Authorities' systems and incompatibilities between utilities' and authorities' systems	19
Lack of clarity in the legislation	10
Non-availability of training	5
Invoicing errors by authorities	10
Poor NSG data	16
Administrative errors not acknowledged by the authorities	30
Authorities unsympathetic to requests for extensions	6

From the above it can be seen that the utilities perceive a relatively small set of problems as meriting consideration. The highest percentage claimed that genuine administrative errors were not acknowledged although authorities reported that their only means of corroboration is now to inspect every works. Those utilities that reported difficulties with systems had purchased their systems rather than develop them internally.

## APPENDIX G - Extrapolation Mechanism

**G1** The extrapolation of information obtained from the notices in the Study from 25 authorities to the whole of England has been performed using the following ratio

For any authority group -

Sum of the lengths of all roads in **sample** authorities in that group  
divided by

Sum of the lengths of all roads for **all** authorities in that group.

For instance, for inner London Boroughs the selected ratio is

Sum of Lengths of all roads in 5 inner London Boroughs (Greenwich, Hammersmith and Fulham, Kensington and Chelsea, Newham, Westminster)  
divided by

Sum of lengths of all roads in all inner London Boroughs

The possibility of using a different ratio based on a finer classification of roads was briefly investigated. The Department requires that details of road lengths are provide for 12 categories of road. These are as follows:

Motorways  
Trunk Roads non Built up  
Trunk Roads Built up  
Principal Roads Motorways  
Principal Roads non Built up  
Principal Roads Built up  
B Roads Built up  
B Roads non Built up  
C Roads Built up  
C Roads non Built up  
Unclassified Not Built up  
Unclassified Built up

**G2** Details of road lengths for all highway authorities in England are published by the Department (Department for Transport - '*Transport Statistics Great Britain: 2001 Edition*'). These statistics are also published on the Department's web site in Microsoft Excel format and it is this version that has been used here. The table has been copied and enhanced with a classification of each authority using the following key:

CC	County Council
ILB	Inner London Borough
M	Metropolitan Authority
OLB	Outer London Borough
U	Unitary Authority

The identification of London Boroughs as either 'inner' London Boroughs or 'outer' London Boroughs has been agreed with the Department.

For all authorities, the classification has been taken from the sourcebook “Public Authorities Directory 2001”, 27<sup>th</sup> Edition (LGC Information).

**G3** From Table F1 below the total road length in km for each authority group is as follows:

County Councils	207,579.9
Inner London Boroughs	4,844.6
Metropolitan Authorities	42,764.0
Outer London Boroughs	9,753.1
Unitary Authorities	35,066.7
TOTAL ROAD LENGTH	300,008.3

Tables F2 to F6 below contain the road lengths for each of the sample authority groups.

**G4** The method of extrapolation is summarized below.

The details of road lengths for every highway authority in England have been obtained from the above source and are summarized in Table F1. The road length for each sample authority has been obtained from this data. Road lengths for each group of sample authorities are given in Tables F2 to F6. The data in Table 3 has also been used to calculate the road lengths within every highway authority in each group e.g. the total road length for all County Councils. The ratio of the total road lengths for all highway authorities in each group to that of the sample authorities in that group is given in the Column “Expansion Factor” of Table 4. The indicator for any group of sample authorities is multiplied by the relevant Expansion Factor for that group to give an extrapolated indicator for all authorities in that group.

**G5** One example of the use of the Expansion Factors from Table 4 is set down below.

The number of works within the electricity sector for each group of sample authorities in September 2001 (“the indicator” in this example) has been obtained from the notices provided to Halcrow. To extrapolate to the number of works for all authorities, the indicator for each group of sample authorities is extrapolated using the relevant factor from Table F7 below, and the resulting estimates are then summed.

For instance, indicator for all county councils = (indicator for sample county councils) \* 5.81

*(The value 5.81 is obtained from Table F7)*

Similar operations are performed for every other group of authorities.

Indicator for all authorities = indicator for all county councils +  
indicator for all inner London Boroughs +  
indicator for all metropolitan authorities +  
indicator for all outer London Boroughs +  
indicator for all unitary authorities

**Table G1 - Road Lengths for All Highway Authorities in England**

Highway Authority	S	Type	Length (km)
Bedfordshire		CC	2,307.5
Buckinghamshire		CC	3,254.0
Cambridgeshire		CC	4,600.9
Cheshire		CC	5,232.7
Cornwall		CC	7,647.2
Cumbria		CC	8,027.1
Derbyshire		CC	5,604.4
Devon	S	CC	12,968.5
Dorset		CC	4,284.1
Durham		CC	3,757.7
East Sussex	S	CC	3,369.4
Essex		CC	7,877.5
Gloucestershire	S	CC	5,375.1
Hampshire		CC	8,700.7
Herefordshire		CC	3,386.4
Hertfordshire		CC	5,187.9
Kent		CC	9,037.1
Lancashire		CC	7,200.2
Leicestershire		CC	4,387.7
Lincolnshire		CC	9,018.2
Norfolk		CC	10,076.6
North Yorkshire	S	CC	9,328.5
Northamptonshire		CC	4,451.0
Northumberland		CC	5,050.0
Nottinghamshire	S	CC	4,725.1
Oxfordshire		CC	4,580.0
Shropshire		CC	5,374.2
Somerset		CC	6,821.0
Staffordshire		CC	6,193.2
Suffolk		CC	6,820.2
Surrey		CC	5,474.2
Warwickshire		CC	4,003.8
West Sussex		CC	4,523.1
Wiltshire		CC	4,710.0
Worcestershire		CC	4,224.7
<b>COUNTY COUNCILS</b>			<b>207,579.9</b>

Highway Authority	S	Type	Length (km)
Barking and Dagenham	S	OLB	323.9
Barnet		OLB	741.3
Bexley	S	OLB	534.9
Brent		OLB	475.0
Bromley	S	OLB	898.5
Croydon	S	OLB	785.8
Ealing		OLB	580.8
Enfield		OLB	585.5
Harrow	S	OLB	473.5
Havering		OLB	644.4
Hillingdon		OLB	732.1
Hounslow		OLB	494.0
Kingst'n-u-Thames		OLB	336.1
Merton		OLB	370.8
Redbridge		OLB	526.7
Richmond-u-Thames		OLB	410.8
Sutton		OLB	420.5
Waltham Forest		OLB	418.5
<b>OUTER LONDON</b>			<b>9,753.1</b>

Highway Authority	S	Type	Length (km)
Barnsley		M	1,189.1
Birmingham		M	2,495.4
Bolton		M	1,080.6
Bradford		M	1,926.4
Bury		M	712.1
Calderdale		M	1,290.9
Coventry	S	M	835.4
Doncaster	S	M	1,667.3
Dudley		M	1,000.2
Gateshead		M	887.3
Kirklees	S	M	1,957.6
Knowsley		M	564.2
Leeds	S	M	3,028.8
Liverpool		M	1,416.6
Manchester		M	1,391.5
Newcastle-u-Tyne	S	M	912.1
North Tyneside		M	754.8
Oldham		M	826.9
Rochdale		M	794.2
Rotherham		M	1,168.2
Salford		M	798.0
Sandwell		M	875.1
Sefton		M	990.8
Sheffield		M	1,966.9
Solihull		M	842.0
South Tyneside		M	563.7
St. Helens		M	731.0
Stockport		M	985.9
Sunderland		M	1,137.4
Tameside		M	754.8
Trafford		M	807.4
Wakefield		M	1,498.6
Walsall		M	846.8
Warrington		M	991.6
Wigan		M	1,124.1
Wirral		M	1,205.8
Wolverhampton		M	744.5
<b>METROPOLITAN</b>			<b>42,764.0</b>

Highway Authority	S	Type	Length (km)
Camden		ILB	284.0
City of London		ILB	59.2
Greenwich	S	ILB	487.9
Hackney		ILB	274.0
H'smith and Fulham	S	ILB	222.6
Haringey		ILB	357.0
Islington		ILB	243.9
Kensington and Chelsea	S	ILB	209.9
Lambeth		ILB	391.3
Lewisham		ILB	448.9
Newham	S	ILB	418.1
Southwark		ILB	394.2
Tower Hamlets		ILB	284.4
Wandsworth		ILB	423.6
Westminster	S	ILB	345.6
<b>INNER LONDON</b>			<b>4,844.6</b>

Highway Authority	S	Type	Length (km)
Bath and North East Somerset	S	U	1,046.7
Blackburn with Darwen		U	579.5
Blackpool		U	464.1
Bournemouth		U	508.1
Bracknell Forest		U	440.9
Brighton and Hove		U	625.3
Bristol	S	U	1,127.1
Darlington		U	534.3
Derby	S	U	735.4
East Riding of Yorkshire		U	3,585.0
Halton		U	558.0
Hartlepool		U	387.3
Isle of Wight		U	857.4
Isles of Scilly		U	36.0
Kingston-u-Hull		U	719.9
Leicester		U	792.0
Luton		U	446.0
Medway Towns		U	808.2
Middlesbrough		U	500.5
Milton Keynes		U	1,128.1
North East Lincolnshire		U	651.3
North Lincolnshire		U	1,413.4
North Somerset		U	1,129.0
Nottingham	S	U	786.7
Peterborough		U	864.7
Plymouth		U	791.9
Poole		U	511.9
Portsmouth		U	442.3
Reading		U	382.0
Redcar and Cleveland		U	676.3
Rutland		U	534.6
Slough		U	310.9
South Gloucestershire		U	1,475.7
Southampton		U	576.6
Southend-on-Sea		U	446.3
Stockton-on-Tees		U	845.9
Stoke-on-Trent		U	847.5
Swindon		U	794.4
Telford and The Wrekin		U	1,007.2
Thurrock		U	564.0
Torbay		U	522.2
West Berkshire		U	1,361.6
Windsor and Maidenhead		U	689.4
Wokingham		U	710.9
York	S	U	850.2
<b>UNITARY AUTHORITIES</b>			<b>35,066.7</b>

<b>GRAND TOTAL</b>	<b>300,008.3</b>
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**Note:** 'S' indicates Sample Authority

**Table G2**  
**Road Lengths - County Councils (km)**

Devon	12,968.5
East Sussex	3,369.4
Gloucestershire	5,375.1
North Yorkshire	9,328.5
Nottinghamshire	4,725.1
Total road length	35,766.6

**Table G3**  
**Road Lengths - Inner London Boroughs (km)**

Greenwich	487.9
Hammersmith and Fulham	222.6
Kensington and Chelsea	209.9
Newham	418.1
Westminster	345.6
Total road length	1,684.1

**Table G4**  
**Road Lengths - Metropolitan Authorities (km)**

Coventry	835.4
Doncaster	1,667.3
Kirklees	1,957.6
Leeds	3,028.8
Newcastle upon Tyne	912.1
Total road length	8,401.2

**Table G5**  
**Road Lengths - Outer London Boroughs (km)**

Barking and Dagenham	323.9
Bexley	534.9
Bromley	898.5
Croydon	785.8
Harrow	473.5
Total road length	3,016.6

**Table G6**  
**Road Lengths - Unitary Authorities (km)**

Bath and North East Somerset	1,046.7
Bristol	1,127.1
Derby	735.4
Nottingham	786.7
York	850.2
Total road length	4,546.1

**Table G7**  
**Ratios of Road Lengths for Sample Authorities to total Road Lengths for Equivalent Authorities for England**

<b>Authority Category</b>	<b>Road Lengths – Sample Authorities (km) (A)</b>	<b>Road Lengths – England (km) (B)</b>	<b>Expansion Factor B/A (C)</b>
County Councils	35,766.6	207,579.9	5.81
Inner London Boroughs	1,684.1	4,844.6	2.87
Metropolitan Authorities	8,401.2	42,764.0	5.10
Outer London Boroughs	3,016.6	9,753.1	3.24
Unitary Authorities	4,546.1	35,066.7	7.69