

Annual Compliance with Drinking Water Parameters - Detailed Results for 2001

Final Report to the Drinking Water Inspectorate

**ANNUAL COMPLIANCE WITH DRINKING WATER PARAMETERS -
DETAILED RESULTS FOR 2001**

Final Report to the Drinking Water Inspectorate

Report No: DWI 43/2/161 - 06 A

June 2002

Author: J C Ellis

Contract Manager: J C Ellis

Contract No: 12891-0

This report has the following distribution:

Any enquiries relating to this report should be referred to the Contract Manager at the following address:

WRc plc, Frankland Road, Blagrove, Swindon, Wiltshire. SN5 8YF
Telephone: 01793 865000

CONTENTS

Page

LIST OF TABLES	ii
LIST OF FIGURES	ii
EXECUTIVE SUMMARY	1
1. INTRODUCTION	3
1.1 Background	3
1.2 The present report	3
2. INDIVIDUAL PARAMETER COMPLIANCE	5
3. WATER QUALITY INDEX RESULTS	9
3.1 Overall Index	9
3.2 Operational Index	10
4. DETERMINING TRENDS IN PERFORMANCE	11
4.1 Methodology	11
4.2 Results - Overall Index	11
4.3 Results - Operational Index	12
5. RESULTS FOR WALES	13
5.1 Introduction	13
5.2 Individual parameter compliance	13
5.3 Indexes	14
5.4 Trends	14
6. CONCLUSIONS	15

APPENDICES

APPENDIX A	COMPLIANCE RESULTS FOR INDIVIDUAL PARAMETERS	17
APPENDIX B	RESULTS FOR THE WATER QUALITY INDEXES	35

LIST OF TABLES

Table 1.1 - Water company codes	4
Table 2.1 - Mean zonal compliance values for 2001 by parameter and company	5
Table 3.1 - Overall Index results for 2001	9
Table 3.2 - Operational Index results for 2001	10
Table 5.1 - Mean zonal compliance values for 2001 by parameter and company (Welsh)	13
Table 5.2 - Overall Index results for 2001 (Welsh)	14
Table 5.3 - Operational Index results for 2001 (Welsh)	14

LIST OF FIGURES

Figure 4.1 - Statistically significant trends in the Overall Index	11
Figure 4.2 - Statistically significant trends in the Operational Index	12

**ANNUAL COMPLIANCE WITH DRINKING WATER PARAMETERS -
DETAILED RESULTS FOR 2001**

EXECUTIVE SUMMARY

During 1998-99, WRc carried out a statistical consultancy project for the Drinking Water Inspectorate with the objective of developing a statistically sound system for summarising water companies' annual compliance performance for the main water quality parameters. After a continuing process of development and refinement, the finalised scheme was applied to the 1998 compliance data for all companies in England and Wales and a summary of the findings included in the Chief Inspector's report. At around the same time WRc produced a project report (DETR/DWI 4757) which provided a comprehensive account of the statistical methodology used, and also presented more detailed graphical and tabular information.

Using that methodology, WRc carried out similar analyses of the 1999 and 2000 compliance data for the Inspectorate. These exercises were reported in DETR/DWI 4919 and DWI 5015-2 respectively.

WRc has recently undertaken a similar analysis of the 2001 compliance data. As before, the main findings have been included in the Chief Inspector's report, and so the purpose of the present report is to provide the more detailed tables and graphs from that analysis for reference purposes. These fall into three categories:

1. Comparisons of company performance against target (defined as overall mean zonal compliance) for each of 17 key parameters;
2. Broader assessments of company performance using Overall and Operational indexes; and
3. Identification of trends in Overall and Operational indexes over the six-year period 1996-2001.

The report is mainly concerned with the detailed results for England and Wales as a whole. However, in support of the summary provided for the National Assembly for Wales the report also gives the corresponding background detail for the four companies which supply water to Wales.

1. INTRODUCTION

1.1 Background

During 1998-99, WRc carried out a statistical consultancy project for the Drinking Water Inspectorate with the overall objective of developing a statistically sound system for summarising water companies' annual compliance performance with the main water quality parameters. The system had three main aims:

1. to compare performance between companies in any one year in respect of any specific parameter of interest;
2. to develop Overall and Operational indexes of performance which would provide a broader basis of comparison between companies in any one year; and
3. to identify companies showing statistically significant trends in their performance indexes from 1996 onwards.

After a continuing process of development and refinement, the scheme was finalised in time for it to be applied to the 1998 compliance data for all companies in England and Wales, and a summary of the results was included in the Chief Inspector's report that was published in July 1999. At around the same time WRc produced a project report (DETR/DWI 4757) which provided a comprehensive account of the statistical methodology, and also presented more detailed graphical and tabular information for that reporting year. To provide a broader context for the results, the report also presented the back-calculated results for the 1996 and 1997 compliance data.

WRc carried out similar analyses of the 1999 and 2000 compliance data for the Inspectorate. These exercises were reported in DETR/DWI 4919 and DWI 5015-2.

1.2 The present report

WRc has recently carried out a similar exercise on the 2001 compliance data. As before, the main findings have been included in the Chief Inspector's report, and so the purpose of the present report is to provide the more detailed elements of the 2001 results for reference purposes.

The same format and statistical methodology have been followed as in last year's report. Accordingly, Section 2 presents the 2001 compliance results for each company for each of the 17 key parameters, with supporting plots provided in Appendix A. Section 3 presents the water quality index results, with the corresponding plots shown in Appendix B. Section 4 then summarises the results of the analysis to determine which companies have shown a statistically significant trend in their Overall or Operational Index over the period 1996-2001. Finally, Section 5 presents the corresponding results for just those companies (or part-companies) which supply water to Wales.

For compactness, water companies are identified in all tables and graphs by just their three-character codes ('BRL' for Bristol, for example). Table 1.1 provides a key linking the codes to their full company names.

Table 1.1 - Water company codes

Company	Code
Albion	ALB
Anglian	ANG
Bournemouth	BWH
Bristol	BRL
Cambridge	CAM
Cholderton	CHO
Dee Valley	DVW
Dwr Cymru	DWR
Essex & Suffolk	ESK
Folkestone	FLK
Hartlepool	HPL
Mid Kent	MKT
Northumbrian	NNE
North West (United Utilities)	UU
Portsmouth	PRT
Severn Trent	SVT
South East	SEW
South Staffs	SST
South West	SWT
Southern	SRN
Sutton & East Surrey	SES
Tendring Hundred	THD
Thames	TMS
Three Valleys	TVW
Wessex	WSX
Yorkshire	YKS
Severn Trent (Welsh zones only)	SVT(W)

2. INDIVIDUAL PARAMETER COMPLIANCE

Mean zonal compliance values and their associated 95% confidence intervals have been calculated for a total of 17 parameters (although two of these - Nitrite and PAH - are not included in the Overall Index presented in Section 3). The means are listed in Table 2.1 below, with the flag 'Hi' or 'Lo' indicating values that are statistically significantly higher or lower than the grand mean zonal target for that parameter.

The results are also shown graphically in Appendix A.

Table 2.1 - Mean zonal compliance values for 2001 by parameter and company

	ALB	ANG	BWH	BRL	CAM	CHO
Aluminium	100.00	100.00	100.00	100.00	100.00	100.00
Coliforms	100.00	99.64	99.38	99.77 Hi	99.48	100.00
Colour	100.00	100.00	100.00	100.00	100.00	100.00
Fcoliforms	100.00	99.98	99.93	99.94	100.00	100.00
pH	100.00	100.00	100.00	100.00	100.00	100.00
Iron	100.00	99.72 Hi	98.15	99.76	100.00	100.00
Lead	100.00	99.88	100.00	100.00	100.00	100.00
Manganese	100.00	99.99 Hi	100.00	99.87	100.00	100.00
Nitrate	100.00	99.58 Lo	100.00	100.00	95.56 Lo	100.00
Nitrite	100.00	93.87 Lo	98.55	100.00 Hi	100.00	100.00
Odour	100.00	100.00	100.00	100.00	100.00	100.00
PAH	100.00	99.36	96.58	96.71 Lo	99.52	100.00
Taste	100.00	100.00	100.00	100.00	100.00	100.00
Tot.pests	100.00	100.00	100.00	100.00	100.00	100.00
Indiv.pest	100.00	100.00 Hi	100.00	100.00	100.00	100.00
Trihalom.	100.00	100.00	100.00	100.00	100.00	100.00
Turbidity	100.00	99.95	100.00	100.00	100.00	100.00
Mean:	100.00	99.53	99.56	99.77	99.68	100.00

Table 2.1 - continued

	DVW	DWR	ESK	FLK	HPL	MKT
Aluminium	100.00	99.85	100.00	100.00	100.00	100.00
Coliforms	100.00 Hi	99.82 Hi	99.50	99.88 Hi	99.70	99.48
Colour	100.00	100.00	100.00	100.00	100.00	100.00
Fcoliforms	100.00	99.97	99.97	100.00	100.00	99.94
pH	100.00	99.89	100.00	100.00	100.00	100.00
Iron	99.65	98.74 Lo	99.87 Hi	99.64	100.00	98.68
Lead	100.00	99.56	99.94 Hi	100.00	100.00	100.00
Manganese	99.19	99.81	100.00	99.64	100.00	99.78
Nitrate	100.00	100.00 Hi	100.00 Hi	100.00	100.00	99.66
Nitrite	97.60	97.31 Lo	99.51 Hi	100.00	100.00	100.00 Hi
Odour	100.00	99.71	100.00	100.00	100.00	100.00
PAH	100.00	98.48	100.00 Hi	100.00	93.75	98.88
Taste	100.00	100.00	100.00	100.00	100.00	100.00
Tot.pests	100.00	100.00	100.00	100.00	100.00	100.00
Indiv.pest	100.00	99.99	100.00 Hi	100.00	100.00	100.00
Trihalom.	100.00	98.61 Lo	100.00	100.00	100.00	100.00
Turbidity	100.00	99.94	100.00	100.00	100.00	100.00
Mean:	99.79	99.51	99.93	99.95	99.61	99.79

	UU	NNE	PRT	SVT	SEW	SST
Aluminium	99.88 Lo	99.94	100.00	99.92	100.00	100.00
Coliforms	99.39 Lo	99.40	99.87 Hi	99.61	99.05 Lo	99.68
Colour	100.00	99.93	100.00	100.00	100.00	100.00
Fcoliforms	99.95	99.95	100.00	99.97	99.77 Lo	99.97
pH	99.95	100.00	100.00	100.00	100.00	100.00
Iron	98.51 Lo	98.76 Lo	100.00	99.59 Hi	98.76	99.72 Hi
Lead	98.46 Lo	99.33	99.46	99.91	99.72	100.00
Manganese	99.47 Lo	99.80	100.00	99.99 Hi	99.90	99.93
Nitrate	99.93 Hi	100.00 Hi	100.00	99.98 Hi	100.00	99.60
Nitrite	99.97 Hi	100.00 Hi	100.00 Hi	99.87 Hi	100.00 Hi	99.81 Hi
Odour	100.00	100.00	100.00	100.00	99.93	100.00
PAH	99.72 Hi	99.92 Hi	98.52	98.81	97.51	100.00 Hi
Taste	100.00	99.85	100.00	100.00	100.00	100.00
Tot.pests	100.00	100.00	100.00	100.00	100.00	100.00
Indiv.pest	99.98	99.99	100.00	100.00 Hi	100.00	100.00
Trihalom.	99.06 Lo	99.63	100.00	100.00	100.00	100.00
Turbidity	99.90	99.83 Lo	100.00	100.00 Hi	99.90	100.00
Mean:	99.66	99.78	99.87	99.86	99.68	99.92

Table 2.1 - continued

	SWT	SRN	SES	THD	TMS	TVW
Aluminium	99.97	100.00	100.00	100.00	99.99	100.00
Coliforms	99.41	99.85 Hi	99.51	99.72	99.10 Lo	99.64
Colour	100.00	100.00	100.00	100.00	100.00	100.00
Fcoliforms	99.94	99.99 Hi	100.00	100.00	99.93	99.92
pH	99.97	100.00	100.00	100.00	100.00	100.00
Iron	97.69 Lo	99.60	99.40	99.04	99.78 Hi	99.86 Hi
Lead	99.88	99.82	99.81	100.00	99.78	99.96
Manganese	99.66	100.00	100.00	100.00	99.99 Hi	100.00
Nitrate	100.00 Hi	99.80	100.00	100.00	99.60 Lo	99.89
Nitrite	100.00 Hi	100.00 Hi	95.22 Lo	100.00	98.46 Lo	97.63 Lo
Odour	100.00	100.00	100.00	100.00	99.98	100.00
PAH	95.95 Lo	95.02 Lo	99.49	100.00	99.41 Hi	99.67
Taste	100.00	100.00	100.00	100.00	100.00	100.00
Tot.pests	100.00	100.00	100.00	100.00	100.00	100.00
Indiv.pest	99.99	100.00	100.00	100.00	100.00 Hi	99.98
Trihalom.	99.90	99.89	100.00	100.00	100.00 Hi	100.00
Turbidity	99.94	100.00	100.00	100.00	100.00	99.99 Hi
Mean:	99.55	99.65	99.61	99.93	99.77	99.80

	WSX	YKS
Aluminium	99.99	99.94
Coliforms	99.83 Hi	99.71 Hi
Colour	100.00	99.96 Lo
Fcoliforms	99.97	100.00 Hi
pH	100.00	100.00 Hi
Iron	99.41	99.18
Lead	100.00 Hi	99.98 Hi
Manganese	99.96	99.80
Nitrate	98.53 Lo	99.97 Hi
Nitrite	99.95 Hi	99.80 Hi
Odour	100.00	100.00
PAH	96.48 Lo	100.00 Hi
Taste	100.00	100.00
Tot.pests	100.00	99.92
Indiv.pest	99.96	99.99
Trihalom.	100.00	99.85
Turbidity	99.89	99.91
Mean:	99.65	99.88

3. WATER QUALITY INDEX RESULTS

3.1 Overall Index

Values for the 15-parameter Overall Index together with their associated 95% confidence intervals are presented in Table 3.1, and shown graphically in Appendix B. A comparison of the confidence intervals with the grand zonal mean index of 99.84 shows that five companies are significantly higher and four are significantly lower than average.

Table 3.1 - Overall Index results for 2001

Company	Index	95% Conf. Int.		
		Lower	Upper	
CHO	100.00	90.92	100.00	
ALB	100.00	93.11	100.00	
HPL	99.98	95.87	100.00	
BRL	99.96	99.78	100.00	
PRT	99.96	99.67	100.00	
ESK	99.95	99.88	100.00	Sig high
TVW	99.95	99.87	100.00	Sig high
FLK	99.94	98.70	100.00	
SVT	99.93	99.88	99.98	Sig high
SRN	99.93	99.85	100.00	Sig high
SST	99.93	99.84	100.00	
DVW	99.92	99.50	100.00	
THD	99.92	98.82	100.00	
ANG	99.92	99.86	99.97	Sig high
SES	99.91	99.66	100.00	
YKS	99.88	99.84	99.93	
TMS	99.88	99.84	99.91	
WSX	99.84	99.75	99.93	
MKT	99.84	99.23	100.00	
BWH	99.83	99.46	100.00	
SEW	99.80	99.67	99.94	
NNE	99.76	99.71	99.82	Sig low
SWT	99.76	99.68	99.83	Sig low
DWR	99.73	99.65	99.81	Sig low
CAM	99.67	98.62	100.00	
UU	99.63	99.59	99.67	Sig low
	99.84	Grand zonal mean target		

Note: Index is based on 15 parameters, viz those listed in Table 2.1 but excluding nitrite and PAH.

3.2 Operational Index

Values for the Operational Index together with their associated 95% confidence intervals are presented in Table 3.2. A comparison of the confidence intervals with the grand mean index of 99.78 shows that six companies are significantly higher than average, and four are significantly lower. It is interesting to note that - as with the results in previous years - the significant differences are restricted to companies which tend to have the most extensive sampling programmes. This causes their confidence intervals to be narrower than those for the smaller companies, which in turn means that relatively small deviations from the mean still get flagged as being statistically significant.

Table 3.2 - Operational Index results for 2001

Company	Index	95% Conf. Int.		
		Lower	Upper	
CHO	100.00	86.59	100.00	
ALB	100.00	88.74	100.00	
HPL	100.00	94.34	100.00	
CAM	100.00	98.96	100.00	
PRT	100.00	99.51	100.00	
ESK	99.97	99.83	100.00	Sig high
TVW	99.96	99.81	100.00	Sig high
TMS	99.95	99.90	100.00	Sig high
ANG	99.94	99.82	100.00	Sig high
SST	99.94	99.77	100.00	
BRL	99.93	99.64	100.00	
SRN	99.91	99.79	100.00	Sig high
SVT	99.91	99.84	99.98	Sig high
SES	99.90	99.37	100.00	
FLK	99.88	97.45	100.00	
WSX	99.87	99.76	99.98	
THD	99.84	98.48	100.00	
DVW	99.81	99.19	100.00	
YKS	99.78	99.70	99.86	
MKT	99.73	98.49	100.00	
SEW	99.72	99.49	99.95	
BWH	99.68	99.10	100.00	
NNE	99.65	99.56	99.75	Sig low
SWT	99.52	99.38	99.66	Sig low
DWR	99.49	99.33	99.65	Sig low
UU	99.46	99.39	99.53	Sig low
	99.78	Grand zonal mean target		

Note: Index is based on iron, manganese, turbidity, aluminium, faecal coliforms and THMs.

4. DETERMINING TRENDS IN PERFORMANCE

4.1 Methodology

The trend analysis has been carried out using the statistical method described in Appendix A of report DETR/DWI 4757 (though adapted appropriately to cope with six rather than just three years' data). In the light of numerical rounding errors discovered in the Excel method previously used, however, we have used an improved calculation method this year.

4.2 Results - Overall Index

Overall Index values were available for the full six-year span for 25 companies. For 17 of these, no significant differences were found (at the two-sided 95% confidence level) over the six years. The results for the other eight companies are as follows:

?? three companies - SST, SWT and DWR - show a statistically significant *upward linear trend* (see Figure 4.1); and

?? five companies - ESK, NNE, UU, SVT and YKS - show statistically significant *differences between years*.

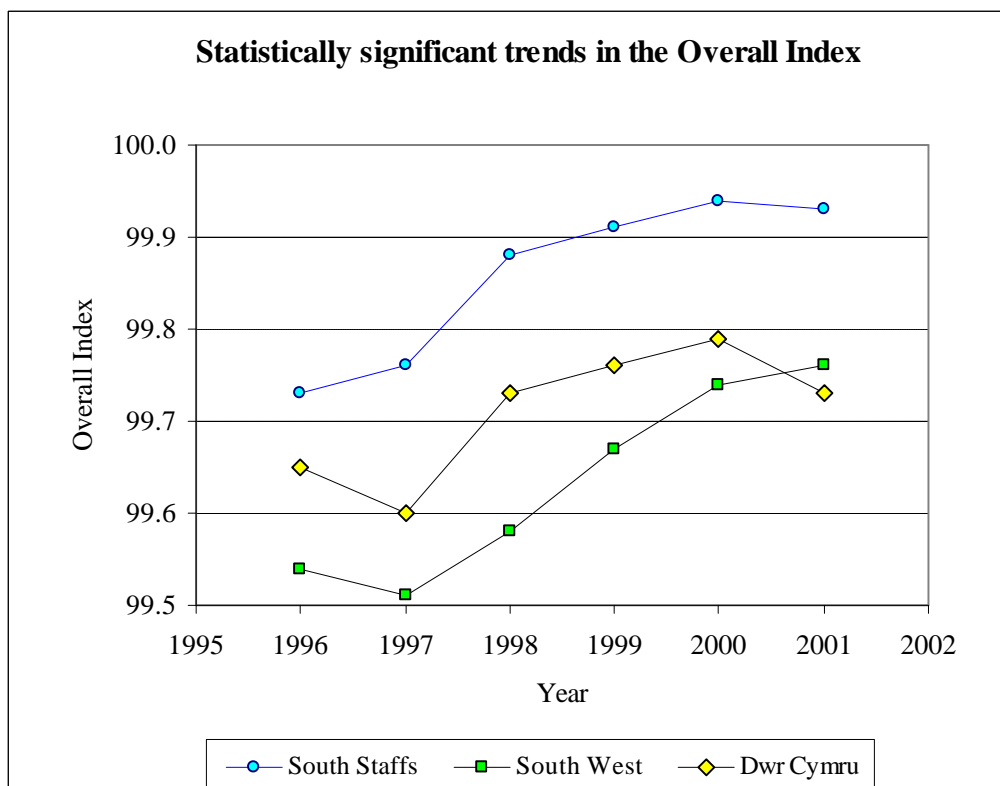


Figure 4.1 - Statistically significant trends in the Overall Index

4.3 Results - Operational Index

For 19 of the 25 companies, no significant differences were found (at the two-sided 95% confidence level) for the six years' Operational Index values. The results for the other six companies are as follows:

?? three companies - ANG, ESK and SWT - show a statistically significant *upward linear trend* (see Figure 4.2); and

?? three companies - NNE, UU and YKS - show statistically significant *differences between years*.

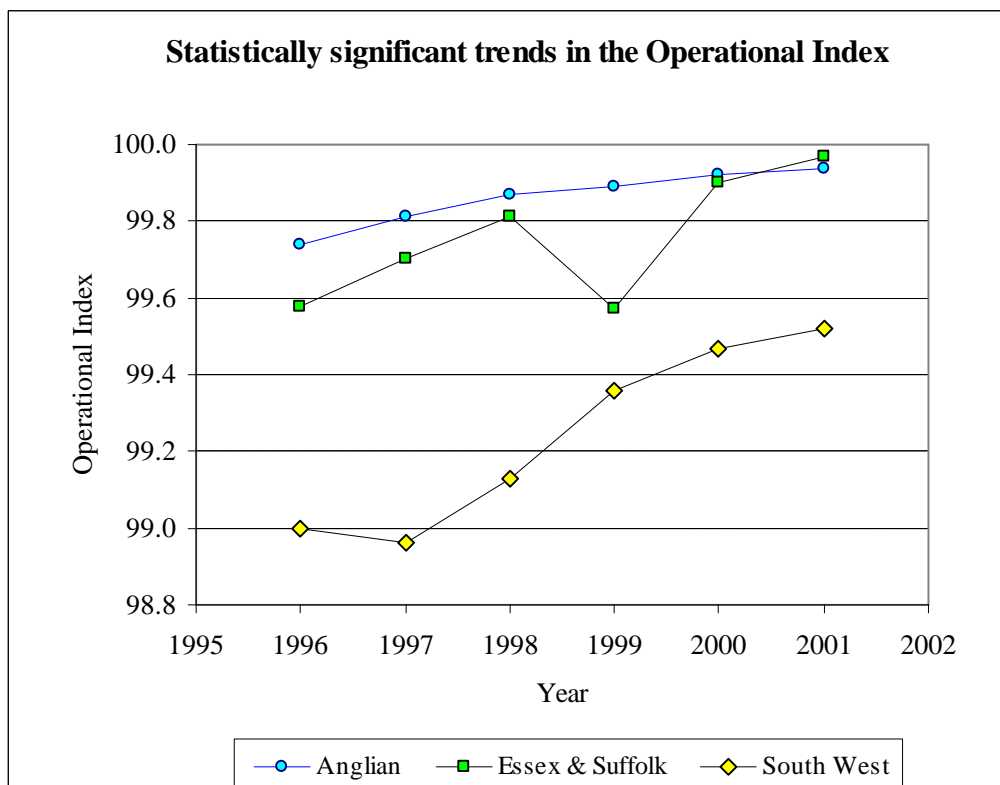


Figure 4.2 - Statistically significant trends in the Operational Index

5. RESULTS FOR WALES

5.1 Introduction

The results reported in Sections 2 to 4 relate to all water companies in England and Wales. Since the creation of the National Assembly for Wales, WRc has also provided the Inspectorate with a separate summary of performance covering just those companies involved (wholly or in part) in supplying water to Welsh zones. These are:

- ? Albion Water (ALB);
- ? Dee Valley Water (DVW);
- ? a small part (currently 4 zones) of Severn Trent Water (SVT(W)); and
- ? Dwr Cymru (DWR).

5.2 Individual parameter compliance

Mean zonal compliance values for the 17 individual parameters are listed in Table 5.1 below for each of the four companies supplying Welsh zones. The 'Hi' and 'Lo' flags indicate values that are statistically significantly higher or lower than the grand mean zonal target for that parameter. For consistency, the same targets have been used as those in the England and Wales assessments presented in Section 2 and illustrated in Appendix A. (Thus the results for ALB, DVW and DWR are identical to those already reported in Table 2.1.)

Table 5.1 - Mean zonal compliance values for 2001 by parameter and company (Welsh)

	ALB	DVW	SVT(W)	DWR
Aluminium	100.00	100.00	100.00	99.85
Coliforms	100.00	100.00 Hi	100.00	99.82 Hi
Colour	100.00	100.00	100.00	100.00
Fcoliforms	100.00	100.00	100.00	99.97
pH	100.00	100.00	100.00	99.89
Iron	100.00	99.65	95.83	98.74 Lo
Lead	100.00	100.00	100.00	99.56
Manganese	100.00	99.19	100.00	99.81
Nitrate	100.00	100.00	100.00	100.00 Hi
Nitrite	100.00	97.60	100.00	97.31 Lo
Odour	100.00	100.00	100.00	99.71
PAH	100.00	100.00	100.00	98.48
Taste	100.00	100.00	100.00	100.00
Tot.pests	100.00	100.00	100.00	100.00
Indiv.pest	100.00	100.00	100.00	99.99
Trihalom.	100.00	100.00	100.00	98.61 Lo
Turbidity	100.00	100.00	100.00	99.94
Mean:	100.00	99.79	99.75	99.51

5.3 Indexes

Values for the Overall Index, together with their associated 95% confidence intervals, are presented in Table 5.2. A comparison of the confidence intervals with the grand England and Wales zonal mean index of 99.84 shows that DWR is statistically significantly lower than average (as was seen earlier in Table 3.1). There are no significant differences from average for the other three companies.

Table 5.2 - Overall Index results for 2001 (Welsh)

Company	Index	95% Conf. Int.		
		Lower	Upper	
ALB	100.00	93.11	100.00	Sig low
DVW	99.92	99.50	100.00	
DWR	99.73	99.65	99.81	
SVT(W)	99.72	95.96	100.00	
	99.84	Grand zonal mean target		

Note: Index is based on 15 parameters, viz those listed in Table 2.1 but excluding nitrite and PAH.

Values for the Operational Index, together with their associated 95% confidence intervals, are similarly presented in Table 5.3. One company - DWR - is statistically significantly lower than the England and Wales grand zonal mean index of 99.78. Again, there are no significant differences from average for the other three companies.

Table 5.3 - Operational Index results for 2001 (Welsh)

Company	Index	95% Conf. Int.		
		Lower	Upper	
ALB	100.00	88.74	100.00	Sig low
DVW	99.81	99.19	100.00	
DWR	99.49	99.33	99.65	
SVT(W)	99.31	94.52	100.00	
	99.78	Grand zonal mean target		

Note: Index is based on iron, manganese, turbidity, aluminium, faecal coliforms and THMs.

5.4 Trends

For the Overall Index, a statistically significant upward trend over the period 1996-2001 was detected for DWR. No significant differences between years were found for ALB, DVW and SVT(W).

For the Operational Index, no statistically significant differences or trends were found for any of the four companies.

6. CONCLUSIONS

The statistical methodology developed by WRc during 1998-99 for assessing water companies' annual compliance data, and described in report DETR/DWI 4757, has recently been applied to the 2001 compliance data for England and Wales.

The main findings from the analysis have been summarised in the Chief Inspector's report. The more detailed tables and graphs from the analysis have been provided here for reference. As in previous reports, they fall into three categories:

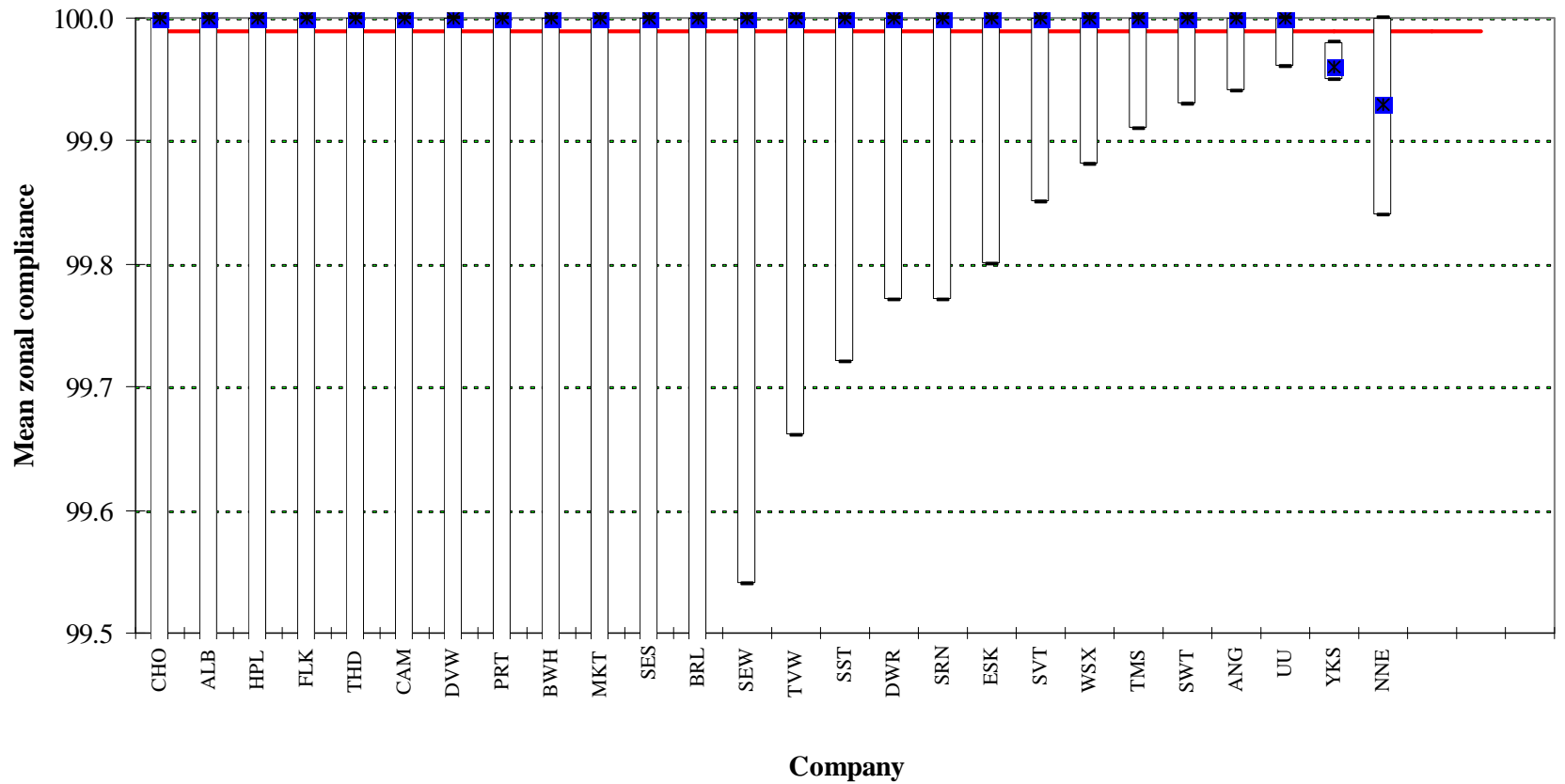
1. Comparisons of company performance against target (defined as overall mean zonal compliance) for each of 17 key parameters;
2. Assessments of company performance using Overall and Operational indexes; and
3. Identification of trends in Overall and Operational indexes over the six-year period 1996-2001.

The report also summarises the quality of drinking water supplied to Wales.

**APPENDIX A COMPLIANCE RESULTS FOR
INDIVIDUAL PARAMETERS**

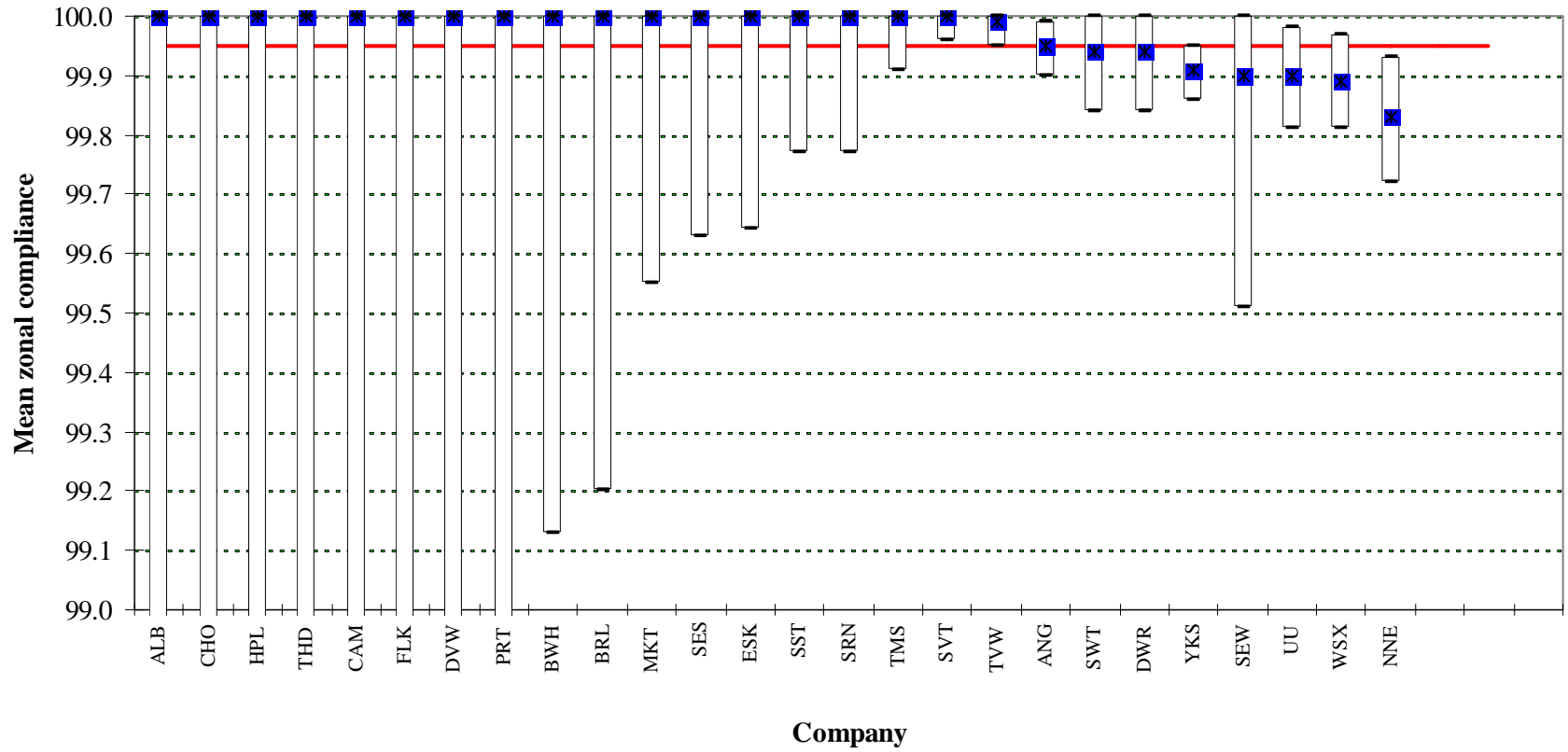
Comparison of 2001 mean zonal compliance for individual companies against target mean

A001: Colour



Comparison of 2001 mean zonal compliance for individual companies against target mean

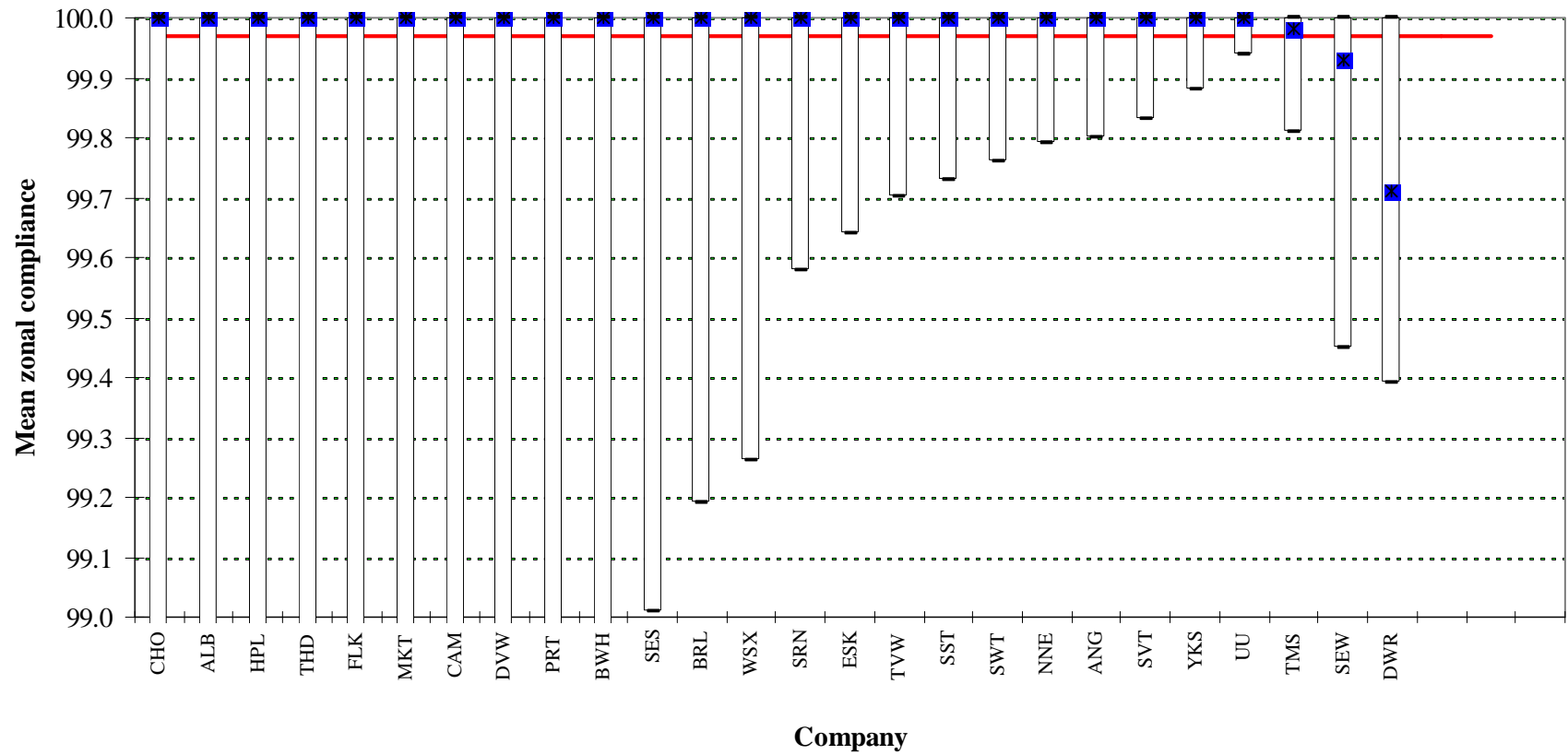
A002: Turbidity



- 95% conf.int.(lower) x Mean zonal compliance — MZ Target - 95% conf.int.(upper)

Comparison of 2001 mean zonal compliance for individual companies against target mean

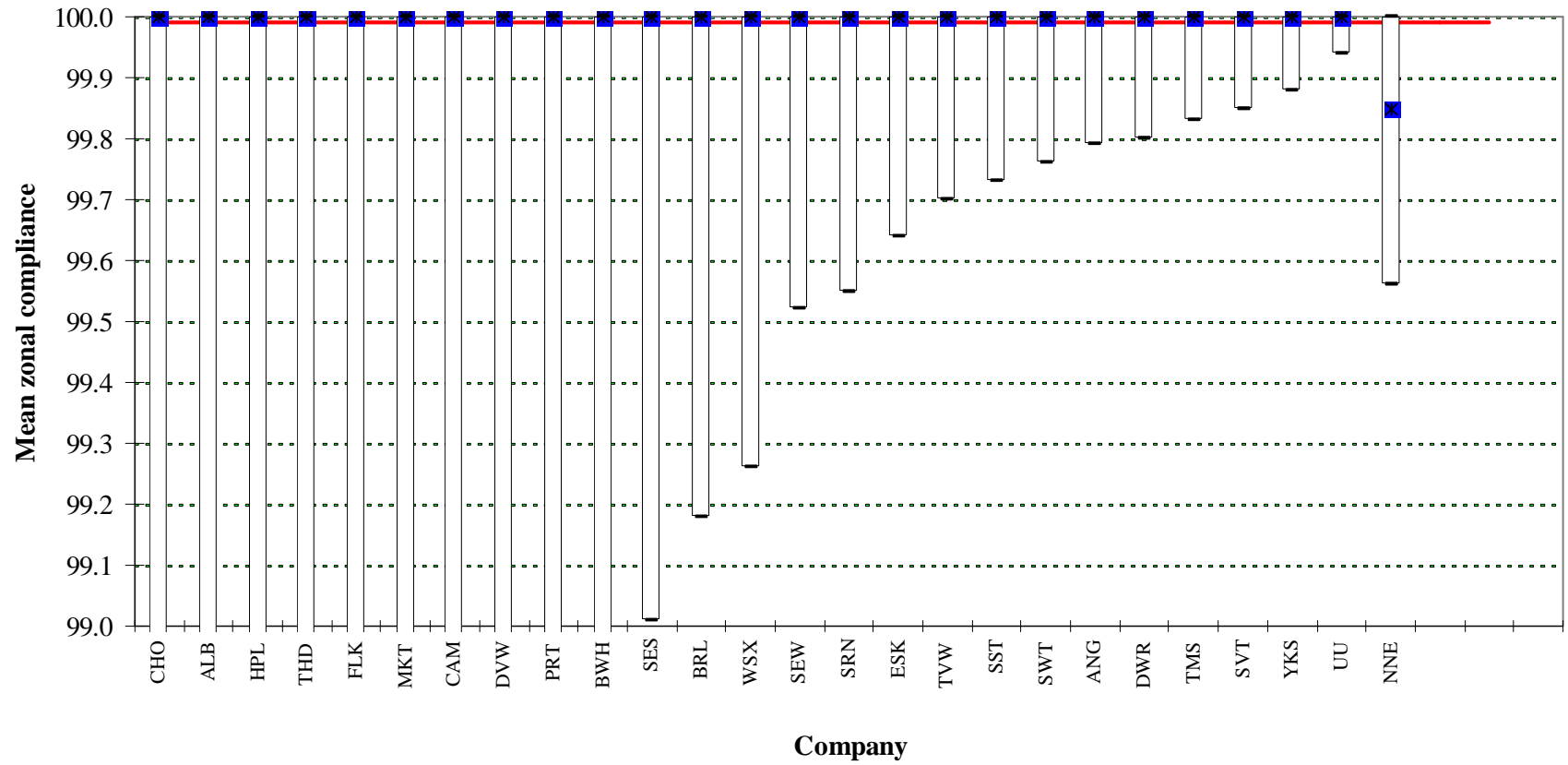
A003: Odour



- 95% conf.int.(lower) ■ Mean zonal compliance — MZ Target - 95% conf.int.(upper)

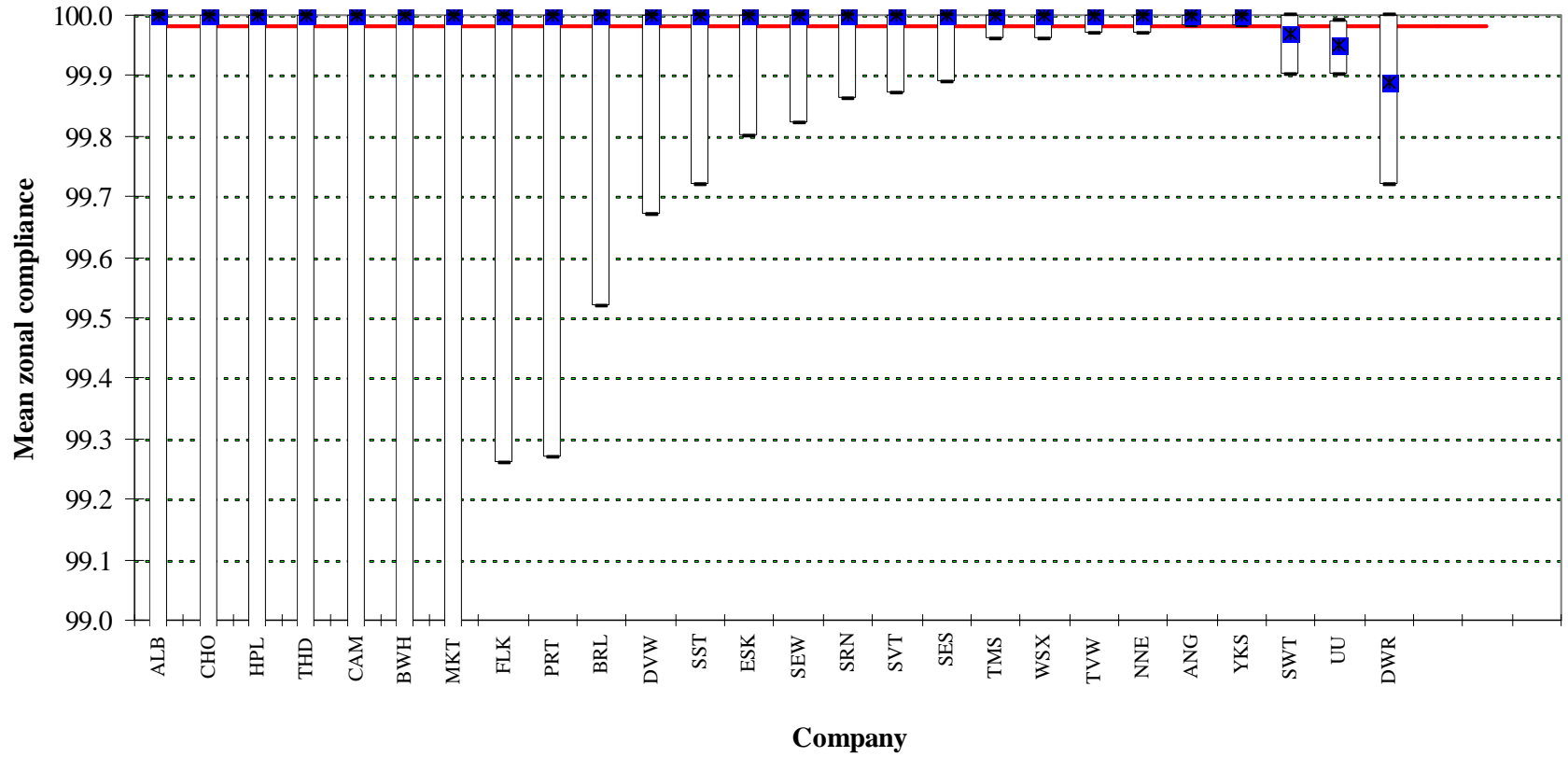
Comparison of 2001 mean zonal compliance for individual companies against target mean

A004: Taste



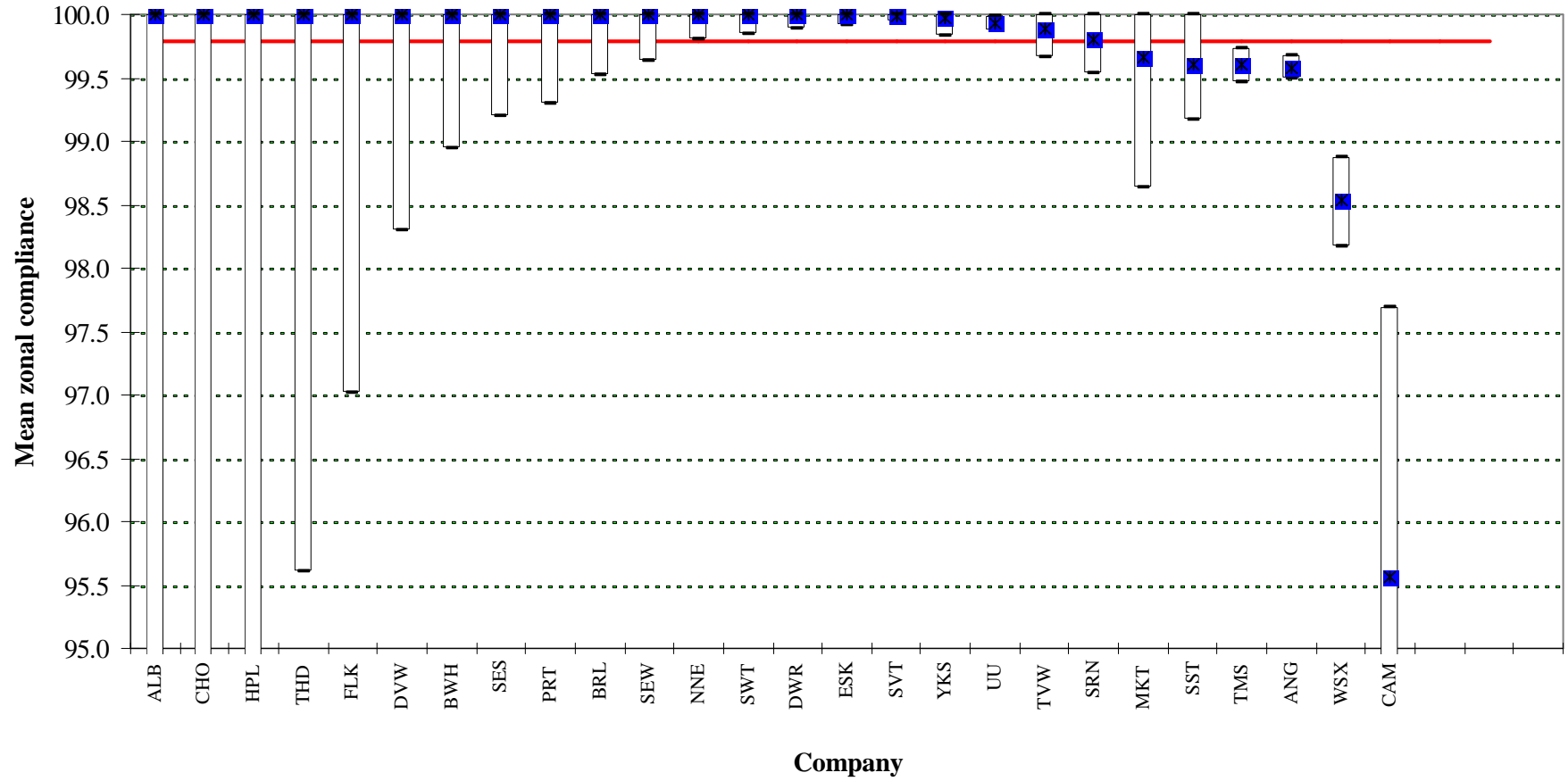
Comparison of 2001 mean zonal compliance for individual companies against target mean

A006: pH



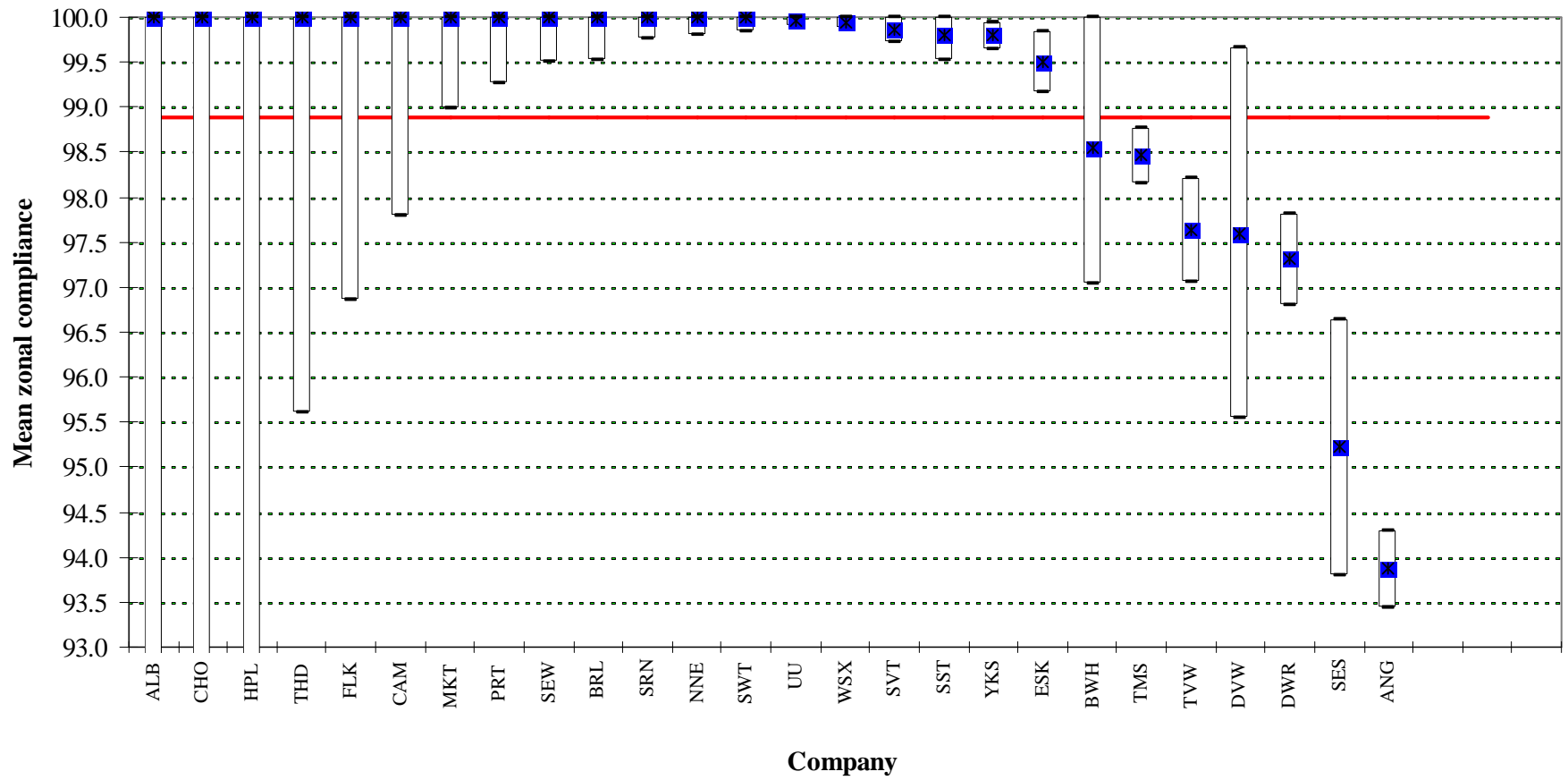
Comparison of 2001 mean zonal compliance for individual companies against target mean

A012: Nitrate



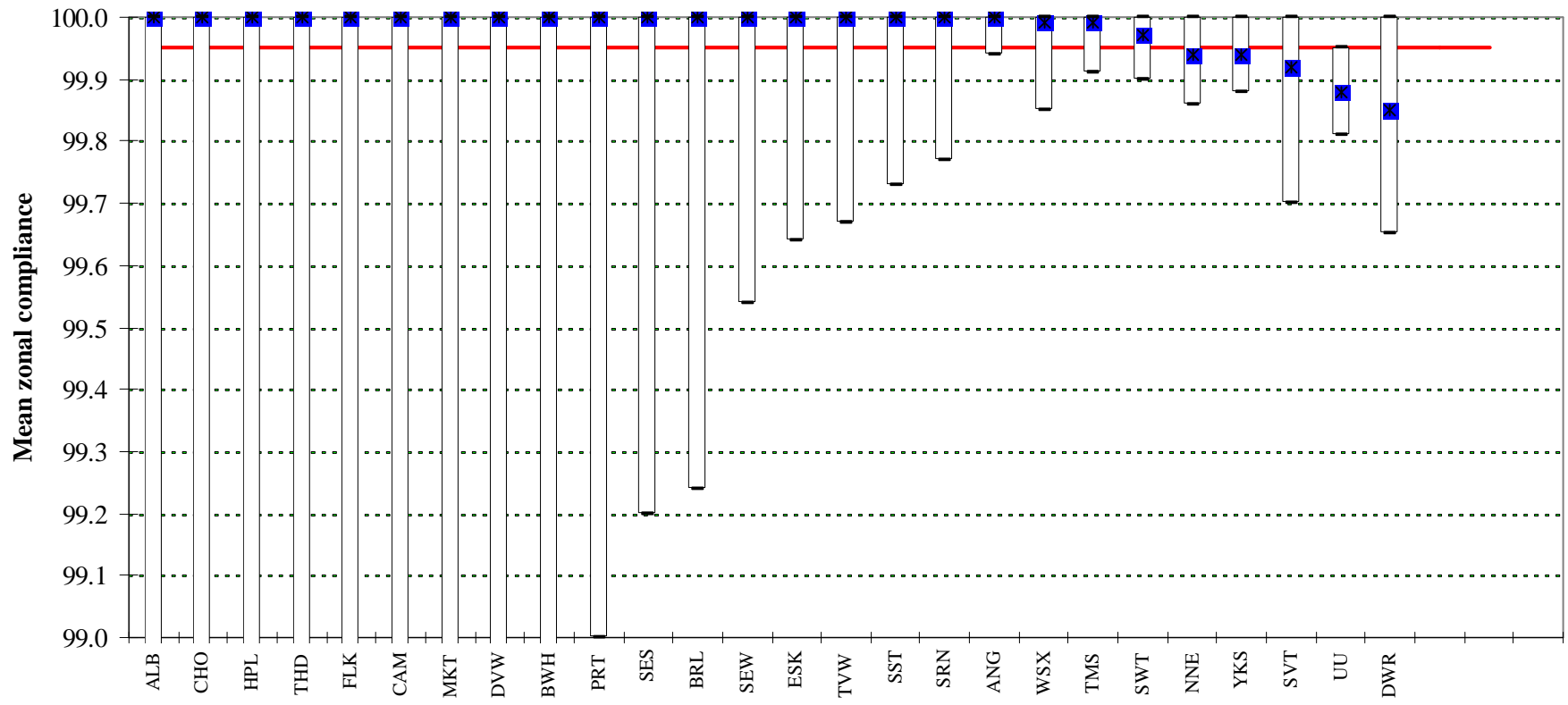
Comparison of 2001 mean zonal compliance for individual companies against target mean

A013: Nitrite



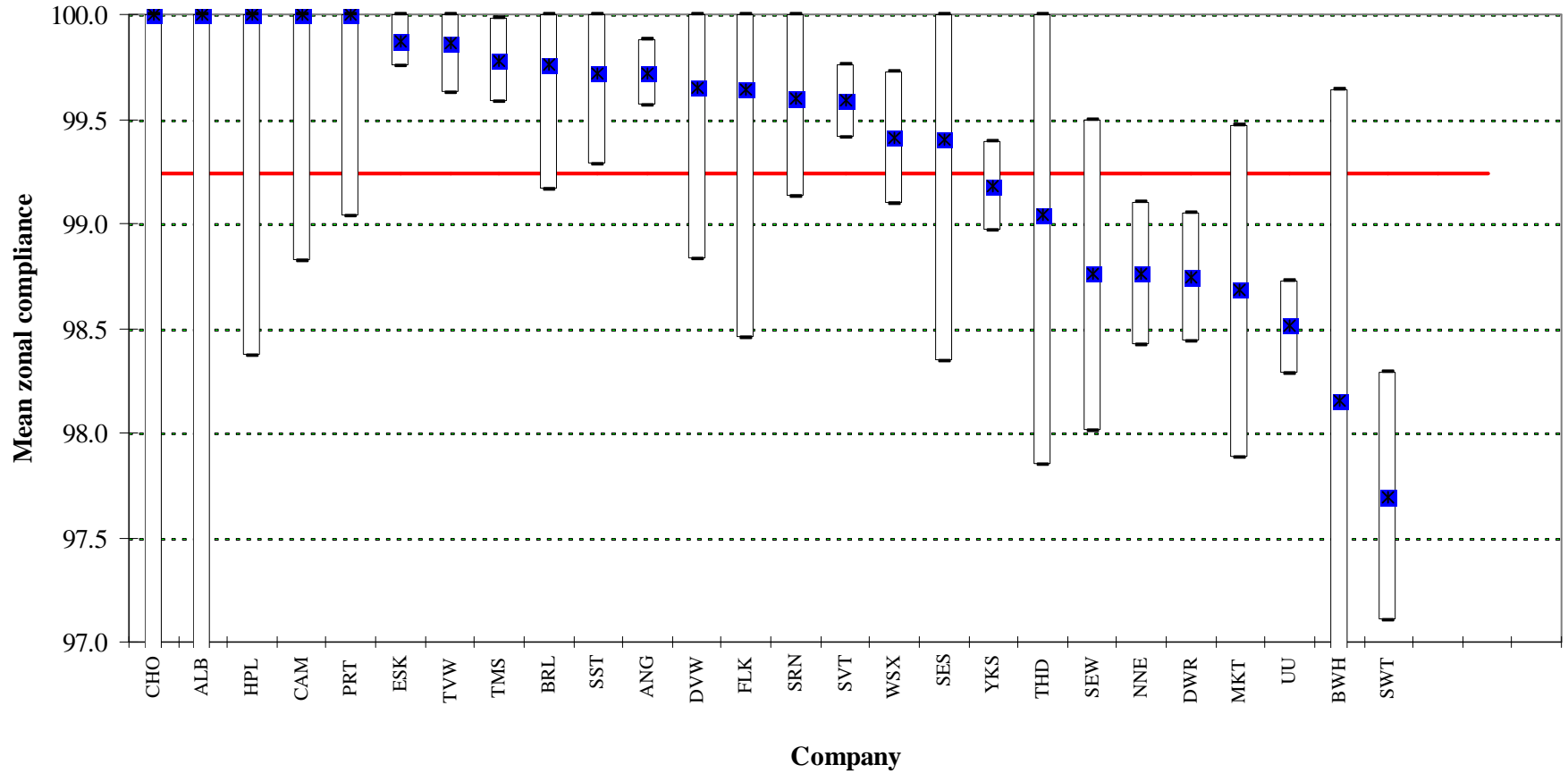
Comparison of 2001 mean zonal compliance for individual companies against target mean

A021: Aluminium



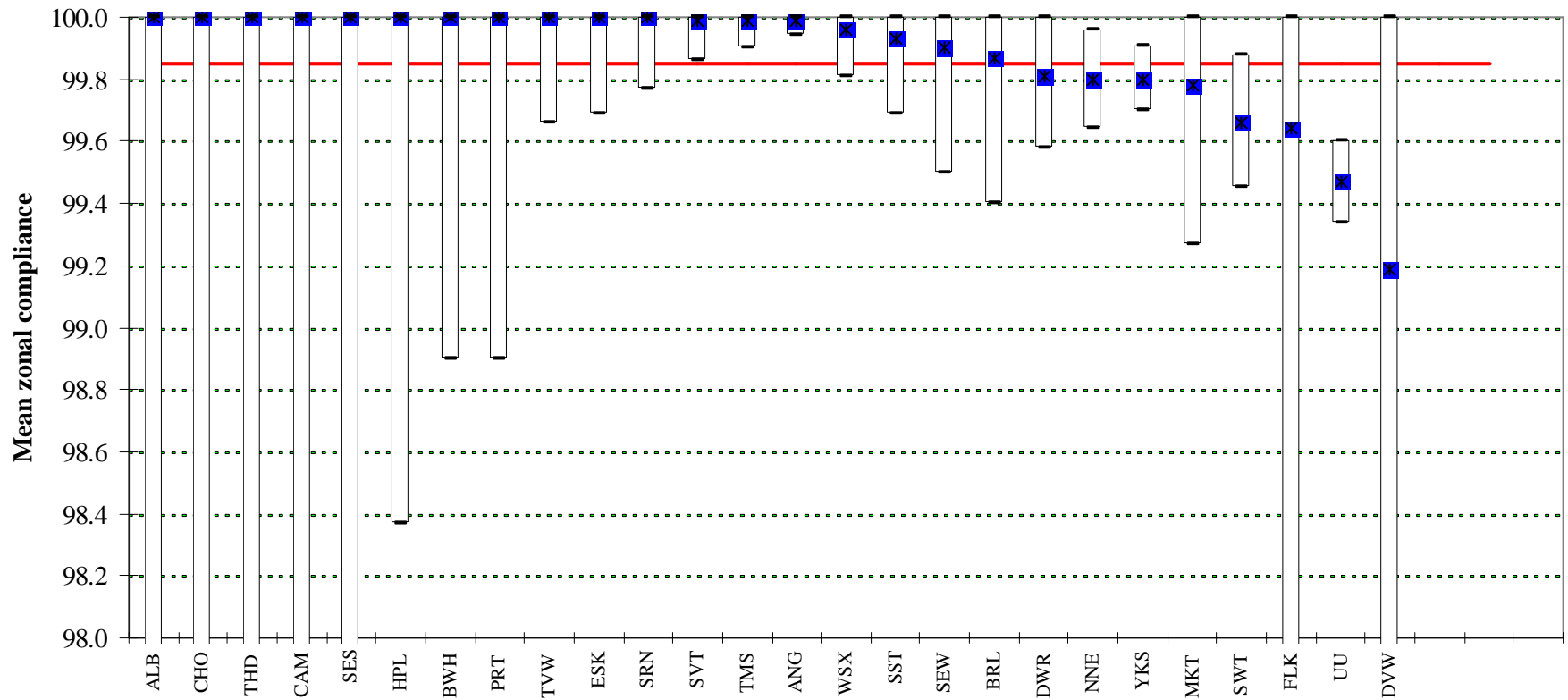
Comparison of 2001 mean zonal compliance for individual companies against target mean

A022: Iron



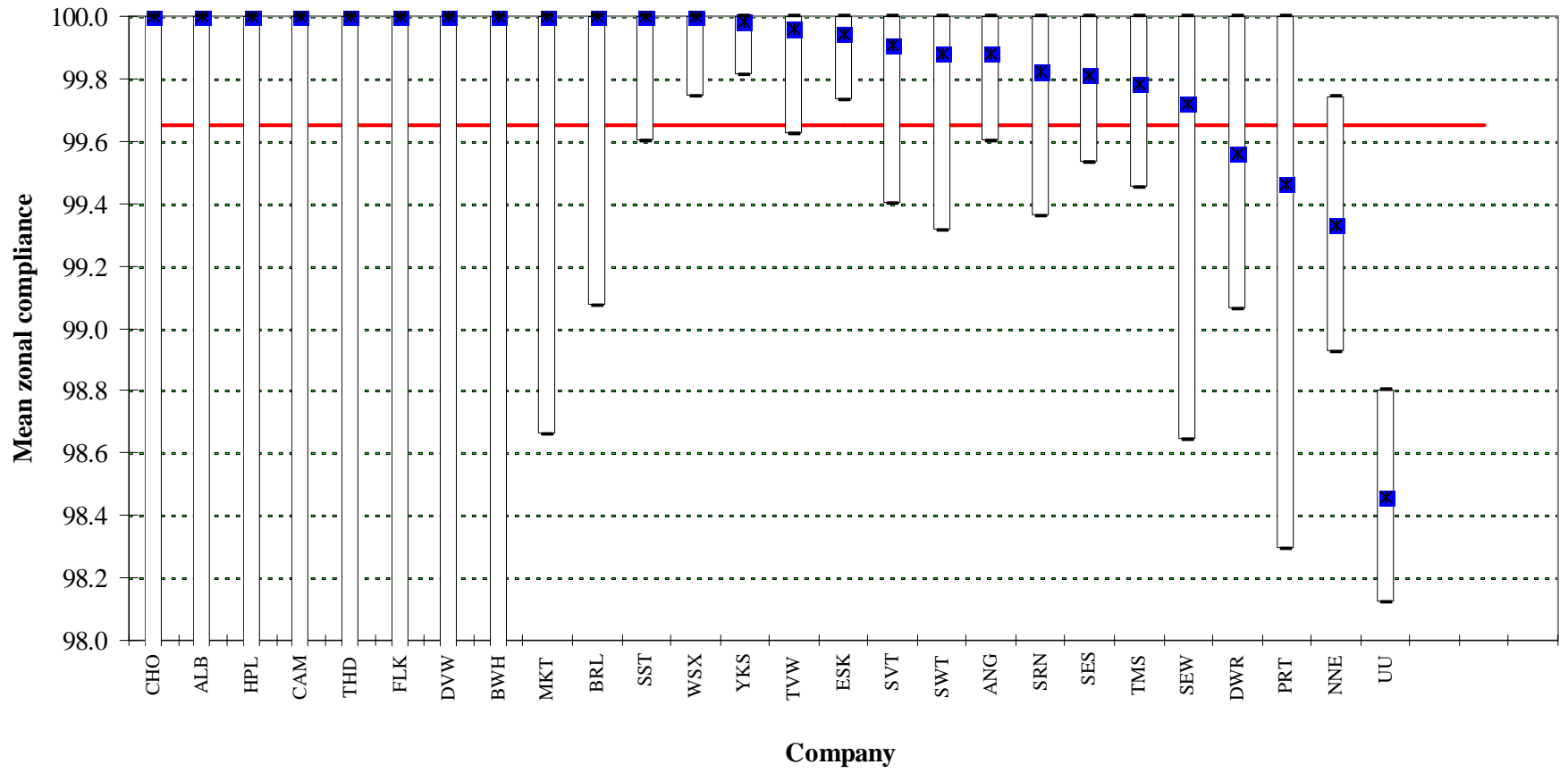
Comparison of 2001 mean zonal compliance for individual companies against target mean

A023: Manganese



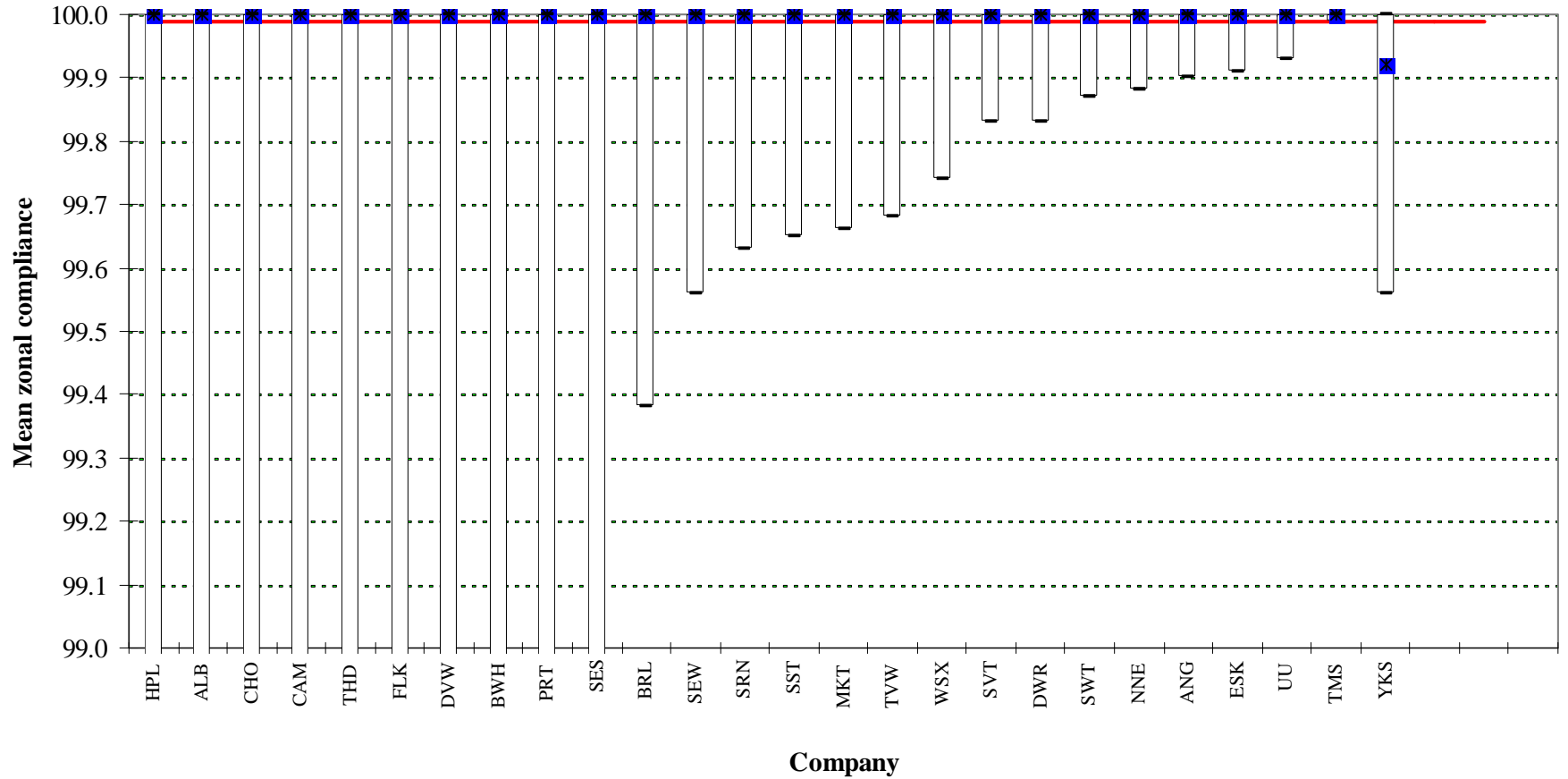
Comparison of 2001 mean zonal compliance for individual companies against target mean

B007: Lead



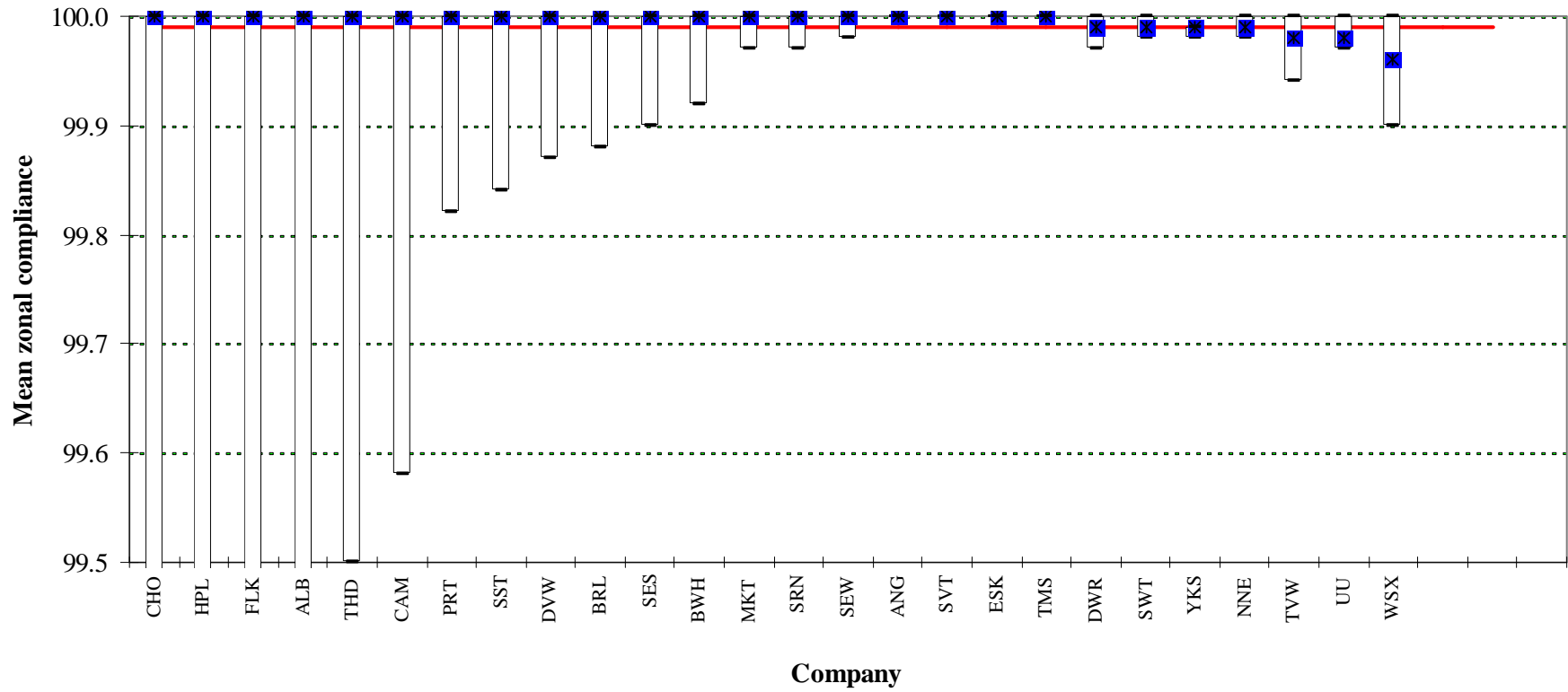
Comparison of 2001 mean zonal compliance for individual companies against target mean

B010: Tot.pests



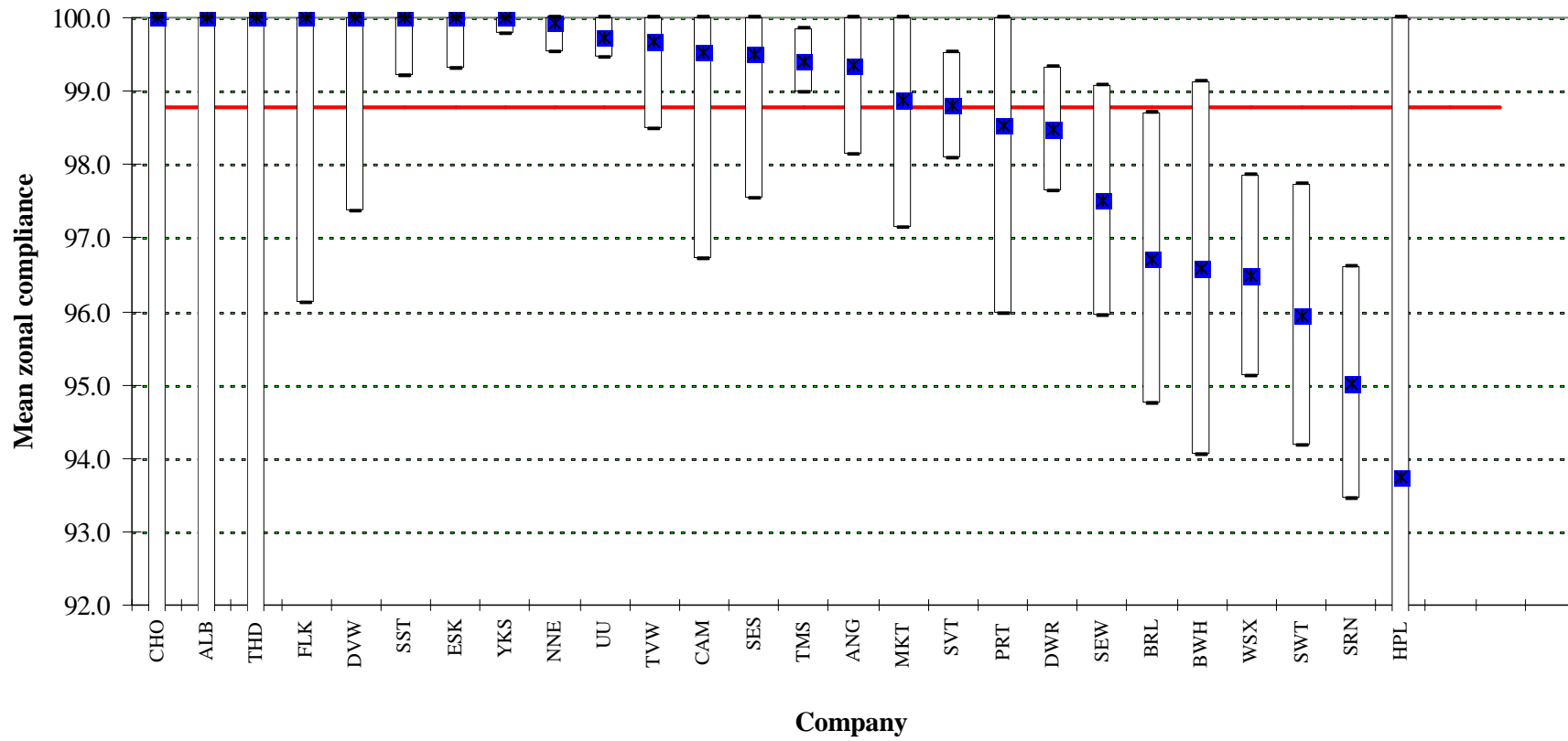
Comparison of 2001 mean zonal compliance for individual companies against target mean

P999: Indiv.pest



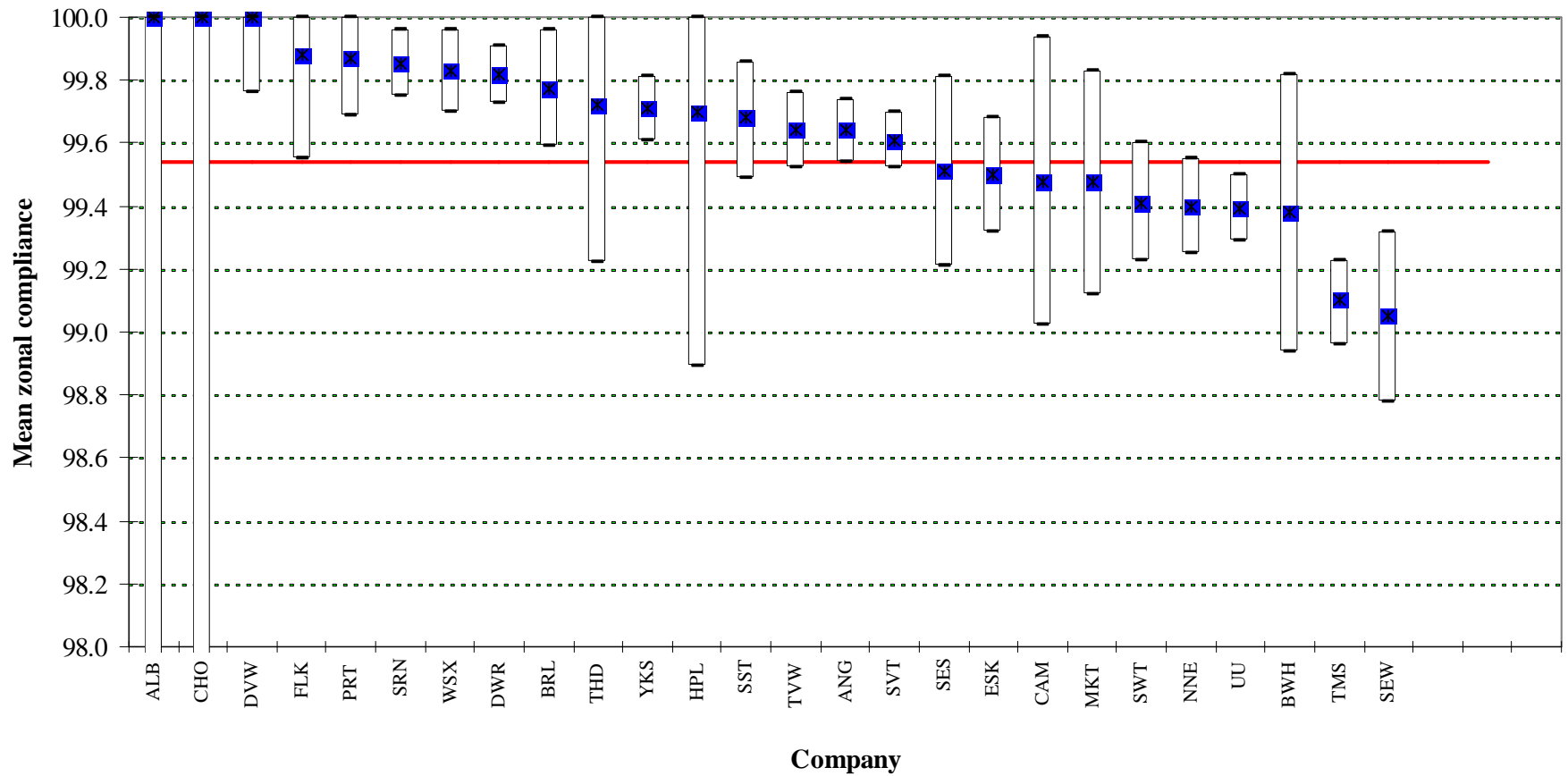
Comparison of 2001 mean zonal compliance for individual companies against target mean

B011: PAH



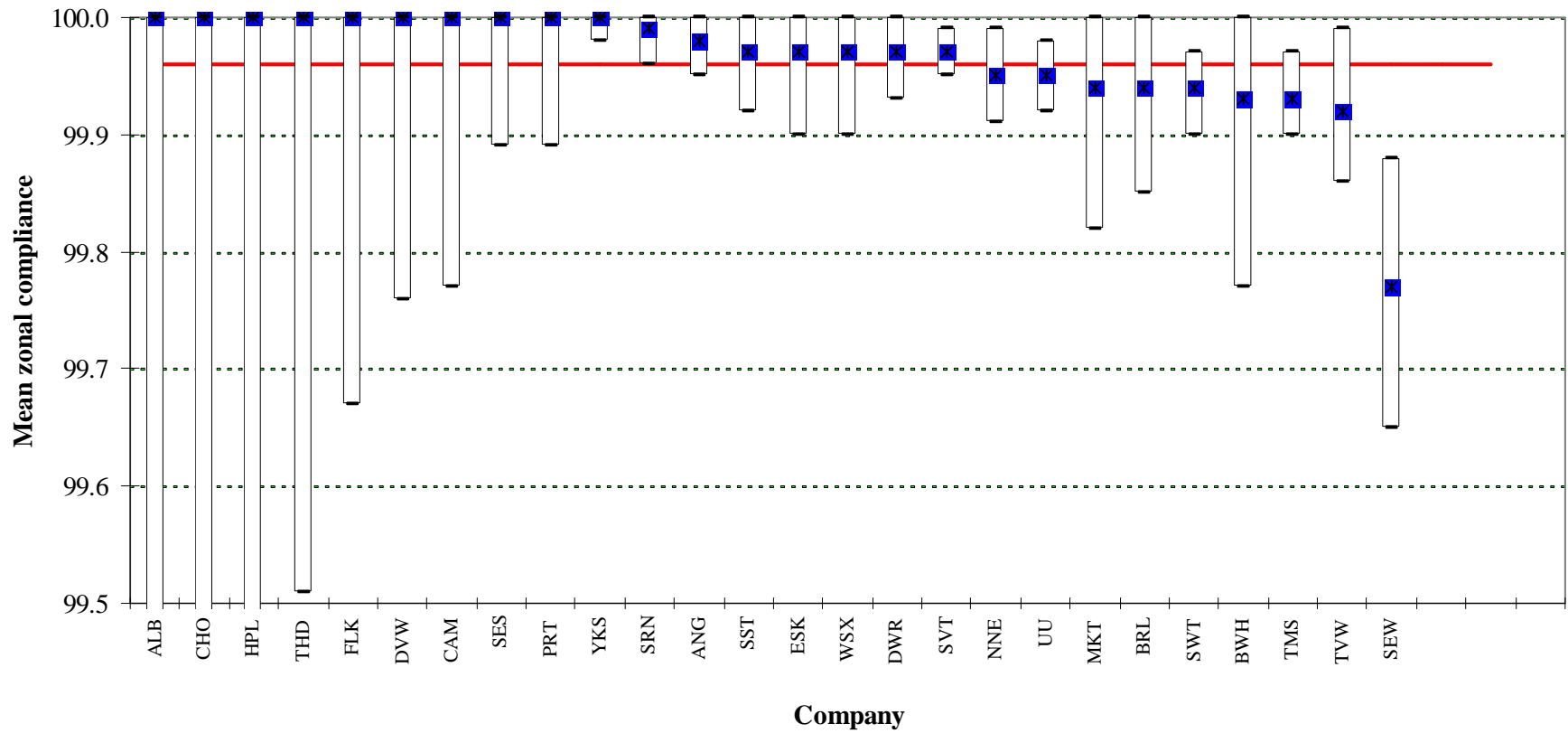
Comparison of 2001 mean zonal compliance for individual companies against target mean

C001: Coliforms



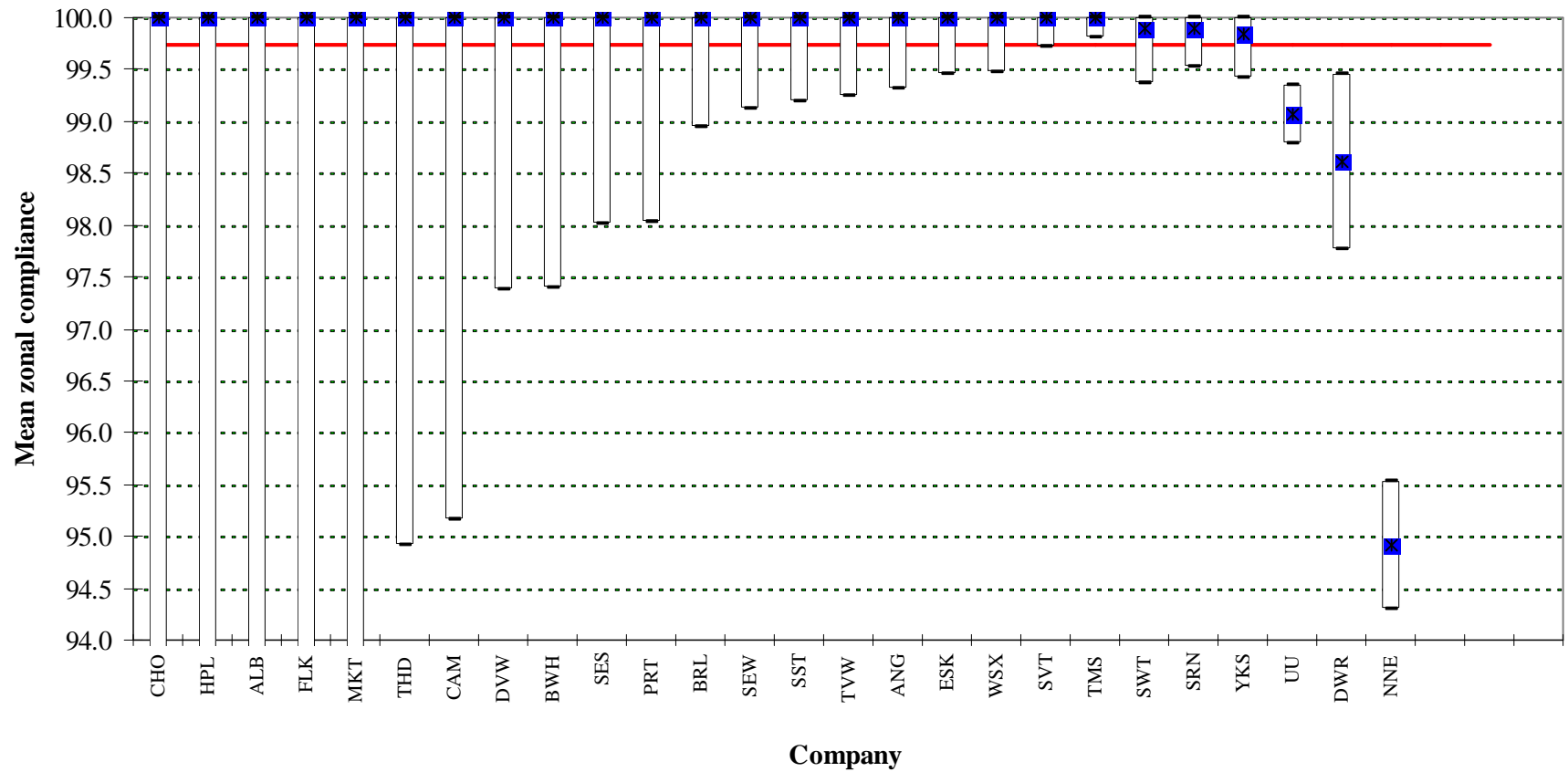
Comparison of 2001 mean zonal compliance for individual companies against target mean

C002: Fcoliforms



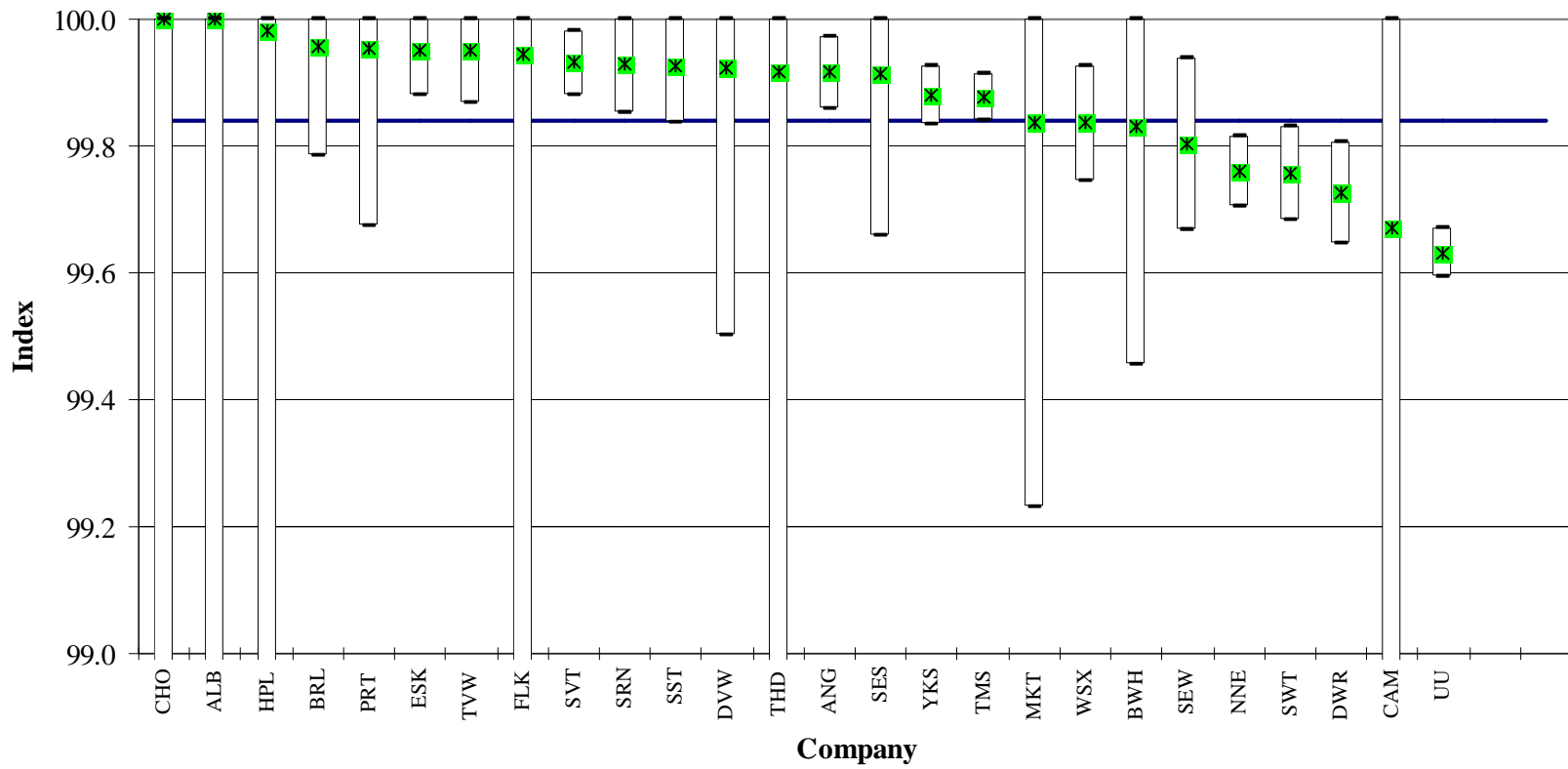
Comparison of 2001 mean zonal compliance for individual companies against target mean

D011: Trihalom.

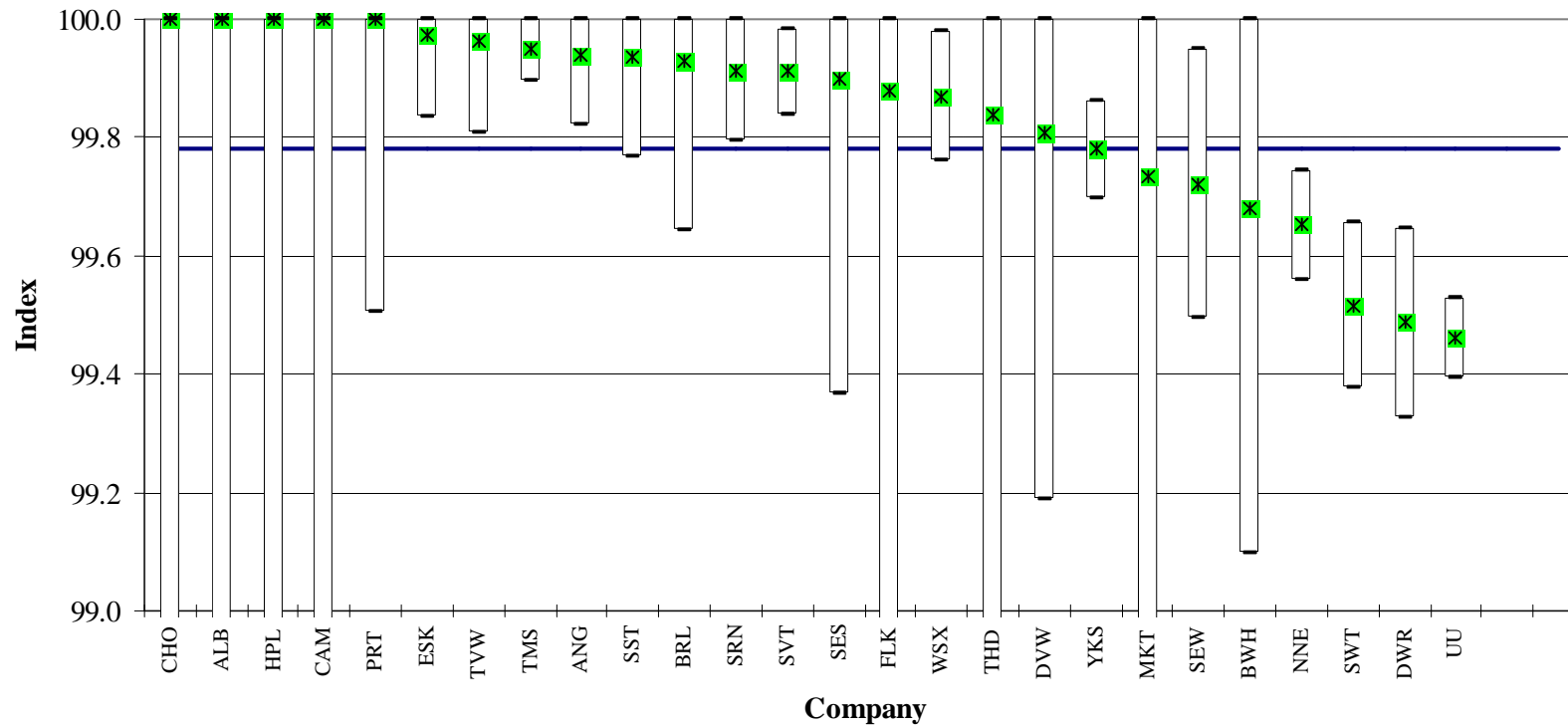


**APPENDIX B RESULTS FOR THE WATER QUALITY
INDEXES**

Overall Index for 2001 data



Operational Index for 2001 data



- 95% conf.int.(lower) x Index
 — Grand zonal mean over companies - 95% conf.int.(upper)