

ENERGY AND WATER BENCHMARKS FOR MAINTAINED

SCHOOLS IN ENGLAND: 2002-03

CONTENTS	PAGE
Introduction	3
Survey Methodology	3
Key points	3
Explanatory notes	4
Table 1 Electricity consumption and cost per m ² floor area by school type	6
Table 2 Fossil fuel consumption and cost per m ² floor area by school type	7
Table 3 Total fuel consumption and cost per m ² floor area by school type	8
Table 4 Electricity consumption and cost per pupil by school type	9
Table 5 Fossil fuel consumption and cost per pupil by school type	10
Table 6 Total fuel consumption and cost per pupil by school type	11
Table 7 Water consumption and cost per m ² floor area by school type	12
Table 8 Water consumption and cost per pupil by school type	13
Table 9 Energy consumption per m ² floor area by Government Office Region	14
Table 10 Energy cost per m ² floor area by Government Office Region	15
Table 11 Water consumption and cost per pupil by Government Office Region	16
Table 12 Carbon emissions produced from energy use by schools	17
Annex	18

INTRODUCTION

1. This Bulletin updates Bulletin 11/02 Energy and Water Benchmarks for Maintained Schools in England: 2000-01. It reports on energy and water consumption and cost in maintained nursery, primary and secondary schools in England in the financial years 1999-00 to 2002-03. Figures on energy consumption for fossil fuels were corrected for variations in ambient temperature. The figures on energy consumption that were published in Statistical First Release 05/2004 Energy and Water Benchmarks for Maintained Schools in England 2002-03 (Provisional) were not corrected for ambient temperature.
2. The aim of the data collection is to enable benchmarking of energy and water consumption in schools and to assess the carbon dioxide and carbon emissions from the schools sector. The data were collected on a voluntary basis from Local Education Authorities in England. They inform the Government's national Climate Change programme and interdepartmental initiatives to reduce energy and water consumption in schools and the wider public sector.
3. The data provide benchmark indicators for LEAs to assess progress towards achievement of targets for reduction in carbon dioxide and carbon emissions resulting from energy usage.
4. They are shared with a number of partner organisations responsible for maintaining benchmarking websites for schools. These include:
 - Heads, Teachers and Industry and their Think Leadership environmental benchmarking website for head teachers and governors www.thinkleadership.org.uk
 - The Building Research Establishment Sustainable Energy Centre (BRESEC) which manages the ActionEnergy programme for the Carbon Trust, which provides an on line energy benchmarking website for schools www.energybenchmarking.co.uk
 - The Office of Government Commerce which runs the Watermark water benchmarking project for the public sector including schools. www.watermark.gov.uk
5. DfES continue to work with the Carbon Trust and the Energy Saving Trust through the Sustainable Energy for Schools Action Group.

SURVEY METHODOLOGY

6. Energy consumption was measured in units of kilowatt hours (kWh) (per year) and converted to carbon dioxide (CO₂) equivalent units and carbon (C) equivalent units using the conversion factors shown in the annex.
7. Energy consumption and cost were then divided by floor area and by number of pupils and expressed in terms of kWh/m² floor area; kg CO₂/m² floor area; kg C/m² floor area; £/m² floor area; kWh/pupil; kg CO₂/pupil; kg C/pupil; £/pupil. Energy consumption for fossil fuels was corrected for ambient temperature.
8. Water consumption was measured in units of m³ (per year). Water consumption and cost were divided by floor area and by number of pupils and expressed in terms of m³/m² floor area; £/m² floor area; m³/pupil and £/pupil.

Medians and quartiles

9. As the statistical distributions tend to be skewed and contain extreme values, the tables show the median, the lower and upper quartiles and the 10th and 90th percentiles of the statistical distributions. The median, which is the 50th percentile of the statistical distribution, is a typical value. Half of schools will have values below it and half above. One quarter of schools will have values below the lower quartile (the 25th percentile) and one quarter above the upper quartile (the 75th percentile). In the same way as the median tends not to be affected by skewness or extreme values in the statistical distribution, the lower and upper quartiles tend not to be affected. The lower and upper quartiles indicate the spread or range of values about the median. Extreme values will be below the 10th percentile or above the 90th percentile.

KEY POINTS

Energy consumption and cost

10. In 2002-03, the median energy consumption per square metre of floor area in maintained nursery, primary and secondary schools was 284kWh, 199kWh and 194kWh respectively. In terms of carbon (C) equivalent units, the figures were 17.91kg, 13.35kg and 13.19kg respectively. In terms of cost, the median energy cost per square metre of floor area was £5.80 for nursery schools, £4.11 for primary schools and £3.83 for secondary schools.

11. The median energy consumption per pupil in maintained nursery, primary and secondary schools in 2002-03 was 1299kWh, 1150kWh and 1632kWh respectively. In terms of carbon (C) equivalent units, the figures were 79.33kg, 77.63kg and 110.93kg respectively. In terms of cost, the median energy cost per pupil was £25.76 for nursery schools, £24.23 for primary schools and £32.40 for secondary schools.

Water consumption and cost

12. In 2002-03, the median water consumption per square metre of floor area in maintained nursery schools was 0.91m³.

13. For maintained primary and secondary schools that had swimming pools in 2002-03, the figures were 0.69m³ and 0.57m³ respectively. For those primary and secondary schools without a pool the median water consumption per square metre of floor area was 0.68m³ and 0.45m³ respectively.

14. The median water cost per square metre of floor area for maintained nursery schools was £1.51. For primary and secondary schools that had swimming pools, the figures were £1.15 and £0.85 respectively. For those primary and secondary schools without a pool the median cost per square metre of floor area was £1.02 and £0.69 respectively.

15. In 2002-03, the median water consumption per pupil for maintained nursery schools was 4.21m³. For primary and secondary schools that had swimming pools, the figures were 4.48m³ and 5.08m³ respectively. For those primary and secondary schools without pools the median water consumption per pupil were 4.02m³ and 3.82m³ respectively.

16. The median water cost per pupil for maintained nursery schools was £6.52. For primary and secondary schools that had swimming pools, the figures were £7.39 and £7.43 respectively. For those primary and secondary schools without a pool, the

median water cost per pupil was £6.03 and £5.89 respectively.

EXPLANATORY NOTES

Sources of information

17. Information on school energy and water consumption and cost and floor area was derived from returns made by LEAs. Information on pupil numbers was derived from the Department's Annual Schools' Census, which records pupil numbers in schools in January each year.

Response rates

18. Data were not available for all schools. Where data were available, schools were included in the analysis of energy consumption and cost if they had non-zero values for both energy consumption and cost for electricity and at least one fossil fuel, floor area and number of pupils. Schools were included in the analysis of water consumption and cost if they had non-zero values for water consumption and cost, floor area and number of pupils. The numbers and percentages of schools that were included in the analysis are set out in the table on the next page.

**Number and percentage of schools analysed
1999-2000**

	Nursery		Primary		Secondary	
Schools in England ¹	514		18,158		3,550	
Schools with returns	321		13,279		2,469	
Percentage of schools with returns	62		73		70	
	Energy	Water	Energy	Water	Energy	Water
Number of schools analysed	255	278	11,445	12,063	2,141	2,157
Percentage of schools analysed	50	54	63	66	60	61

¹ At January 2000

**Number and percentage of schools analysed
2000-01**

	Nursery		Primary		Secondary	
Schools in England ¹	506		18,069		3,481	
Schools with returns	359		14,824		2,755	
Percentage of schools with returns	71		82		79	
	Energy	Water	Energy	Water	Energy	Water
Number of schools analysed	276	256	12,416	12,055	2,415	2,184
Percentage of schools analysed	55	51	69	67	69	63

¹ At January 2001

**Number and percentage of schools analysed
2001-02**

	Nursery		Primary		Secondary	
Schools in England ¹	494		17,985		3,457	
Schools with returns	311		12,170		2,234	
Percentage of schools with returns	63		68		65	
	Energy	Water	Energy	Water	Energy	Water
Number of schools analysed	155	164	10,072	9,125	1,810	1,630
Percentage of schools analysed	31	33	56	51	52	47

¹ At January 2002

**Number and percentage of schools analysed
2002-03**

	Nursery		Primary		Secondary	
Schools in England ¹	475		17,861		3,436	
Schools with returns	331		13,160		2,471	
Percentage of schools with returns	70		74		72	
	Energy	Water	Energy	Water	Energy	Water
Number of schools analysed	228	208	11,010	10,684	2,019	1,928
Percentage of schools analysed	48	44	62	60	59	56

¹ At January 2003

Table 1
Electricity consumption and cost per m² floor area by school type
England
1999-00, 2000-01, 2001-02 and 2002-03

Type of school		Electricity Consumption								Electricity Cost			
		kWh / m ² floor area				kg CO ₂ / m ² floor area				£ / m ² floor area			
		1999-00	2000-01	2001-02	2002-03	1999-00	2000-01	2001-02	2002-03	1999-00	2000-01	2001-02	2002-03
Nursery	Number of schools ¹	255	276	155	228	255	276	155	228	255	276	155	228
	Percentiles:												
	10	17	19	22	18	9	10	11	9	1.23	1.12	1.30	1.14
	25	28	26	29	28	14	13	15	14	1.78	1.63	1.81	1.63
	50	37	38	43	43	19	20	22	22	2.55	2.47	2.52	2.48
	75	54	60	64	67	28	31	33	35	3.58	3.56	3.81	3.90
	90	77	88	118	103	40	46	62	54	4.95	5.17	6.86	5.81
Primary	Number of schools ¹	11,445	12,416	10,072	11,010	11,445	12,416	10,072	11,010	11,445	12,416	10,072	11,010
	Percentiles:												
	10	16	17	17	18	8	9	9	9	1.09	1.05	0.95	0.96
	25	23	25	26	27	12	13	13	14	1.50	1.49	1.42	1.42
	50	31	34	36	37	16	18	19	19	2.05	2.02	2.01	1.98
	75	43	47	50	50	23	24	26	26	2.78	2.77	2.78	2.68
	90	59	63	71	69	31	33	37	36	3.73	3.72	3.80	3.60
Secondary	Number of schools ¹	2,141	2,415	1,810	2,019	2,141	2,415	1,810	2,019	2,141	2,415	1,810	2,019
	Percentiles:												
	10	21	20	16	20	11	11	9	10	1.36	1.20	1.07	1.17
	25	27	28	27	31	14	15	14	16	1.70	1.58	1.49	1.55
	50	34	36	37	39	18	19	19	20	2.06	1.98	1.91	1.92
	75	42	45	46	49	22	23	24	26	2.49	2.42	2.36	2.37
	90	52	56	59	62	27	29	31	32	3.01	2.99	2.90	2.91

¹ Number of schools analysed.

Table 2
Fossil fuel consumption and cost per m² floor area by school type¹
England
1999-00, 2000-01, 2001-02 and 2002-03

Type of school		Fossil Fuel Consumption (corrected for ambient temperature)								Fossil Fuel Cost			
		kWh / m ² floor area				kg CO ₂ / m ² floor area				£ / m ² floor area			
		1999-00	2000-01	2001-02	2002-03	1999-00	2000-01	2001-02	2002-03	1999-00	2000-01	2001-02	2002-03
Nursery	Number of schools ²	255	276	155	228	255	276	155	228	255	276	155	228
	Percentiles:												
	10	75	97	86	111	14	19	16	21	0.90	1.05	1.04	1.27
	25	142	145	147	156	27	28	28	30	1.46	1.62	1.81	2.01
	50	215	216	227	234	42	42	43	45	2.11	2.34	2.67	2.97
	75	328	323	323	332	65	62	61	68	2.96	3.34	3.95	4.22
90	469	470	454	468	99	91	89	91	4.37	4.62	5.54	5.92	
Primary	Number of schools ²	11,445	12,416	10,072	11,010	11,445	12,416	10,072	11,010	11,445	12,416	10,072	11,010
	Percentiles:												
	10	73	45	64	50	15	10	13	10	0.85	0.94	0.99	1.08
	25	117	110	114	112	24	22	23	22	1.16	1.30	1.45	1.52
	50	163	156	160	158	34	32	32	32	1.55	1.74	1.98	2.04
	75	214	205	211	209	45	42	43	43	2.05	2.35	2.61	2.66
90	274	265	275	271	59	54	58	57	2.69	3.14	3.33	3.40	
Secondary	Number of schools ²	2,141	2,415	1,810	2,019	2,141	2,415	1,810	2,019	2,141	2,415	1,810	2,019
	Percentiles:												
	10	74	64	63	45	15	13	13	9	0.83	0.84	0.94	0.97
	25	120	116	113	112	25	23	22	22	1.08	1.15	1.35	1.40
	50	162	158	154	155	34	32	31	31	1.41	1.56	1.82	1.87
	75	208	205	201	204	43	42	42	42	1.82	2.16	2.40	2.44
90	260	259	269	270	56	54	55	56	2.34	2.91	3.07	3.12	

¹ Figures do not include Liquid Petroleum Gas for 1999-00.

² Number of schools analysed.

Table 3
Total fuel consumption and cost per m² floor area by school type¹
England
1999-00, 2000-01, 2001-02 and 2002-03

Type of school		Total Fuel Consumption (includes fossil fuel consumption that has been corrected for ambient temperature)								Total Fuel Cost			
		kWh / m ² floor area				kg CO ₂ / m ² floor area				£ / m ² floor area			
		1999-00	2000-01	2001-02	2002-03	1999-00	2000-01	2001-02	2002-03	1999-00	2000-01	2001-02	2002-03
Nursery	Number of schools ²	255	276	155	228	255	276	155	228	255	276	155	228
	Percentiles:												
	10	120	138	137	150	32	35	37	38	2.76	2.76	3.00	3.07
	25	183	189	189	195	48	46	52	51	3.84	3.86	4.28	4.39
	50	259	266	286	284	62	62	71	70	4.88	5.03	5.71	5.80
	75	376	376	368	381	86	87	91	96	6.41	6.83	7.57	7.64
90	536	506	499	531	123	118	126	130	8.67	9.18	10.31	10.82	
Primary	Number of schools ²	11,445	12,416	10,072	11,010	11,445	12,416	10,072	11,010	11,445	12,416	10,072	11,010
	Percentiles:												
	10	107	90	105	93	28	26	31	29	2.41	2.48	2.54	2.61
	25	152	145	152	151	39	36	42	41	2.97	3.08	3.25	3.32
	50	197	192	200	199	49	47	53	52	3.72	3.89	4.10	4.11
	75	251	244	253	250	62	59	67	66	4.67	4.94	5.16	5.12
90	314	310	325	319	79	75	86	84	5.98	6.32	6.49	6.44	
Secondary	Number of schools ²	2,141	2,415	1,810	2,019	2,141	2,415	1,810	2,019	2,141	2,415	1,810	2,019
	Percentiles:												
	10	107	101	95	81	29	27	28	27	2.52	2.44	2.40	2.53
	25	154	148	146	147	39	37	39	40	2.99	2.96	3.03	3.16
	50	197	194	192	194	49	47	51	52	3.51	3.59	3.76	3.83
	75	247	244	242	249	61	59	64	65	4.21	4.43	4.57	4.63
90	302	304	313	323	75	73	80	82	5.10	5.51	5.58	5.60	

¹ Figures do not include Liquid Petroleum Gas for 1999-00.

² Number of schools analysed.

Table 4
Electricity consumption and cost per pupil by school type
England
1999-00, 2000-01, 2001-02 and 2002-03

Type of school		Electricity Consumption								Electricity Cost			
		kWh / pupil				kg CO ₂ / pupil				£ / pupil			
		1999-00	2000-01	2001-02	2002-03	1999-00	2000-01	2001-02	2002-03	1999-00	2000-01	2001-02	2002-03
Nursery	Number of schools ¹	255	276	155	228	255	276	155	228	255	276	155	228
	Percentiles:												
	10	67	69	83	82	35	36	43	43	4.56	4.12	5.34	4.82
	25	97	106	121	123	50	55	63	64	6.66	6.44	7.58	7.04
	50	141	157	196	182	74	81	102	95	9.75	9.52	11.79	10.99
	75	211	267	337	344	110	139	175	179	13.63	16.83	20.17	19.86
	90	321	458	562	547	167	238	292	285	23.92	28.50	33.43	32.68
Primary	Number of schools ¹	11,445	12,416	10,072	11,010	11,445	12,416	10,072	11,010	11,445	12,416	10,072	11,010
	Percentiles:												
	10	93	104	108	109	48	54	56	57	6.21	6.26	5.86	5.84
	25	128	143	154	157	66	74	80	82	8.46	8.52	8.51	8.37
	50	177	195	213	219	92	101	111	114	11.60	11.65	11.84	11.67
	75	246	271	298	303	128	141	155	158	15.83	16.06	16.60	16.23
	90	340	381	428	431	177	198	223	224	21.39	22.39	23.21	22.60
Secondary	Number of schools ¹	2,141	2,415	1,810	2,019	2,141	2,415	1,810	2,019	2,141	2,415	1,810	2,019
	Percentiles:												
	10	180	170	139	163	94	89	72	85	11.69	10.12	9.45	9.66
	25	237	240	248	260	123	125	129	135	14.82	13.49	13.42	13.03
	50	294	307	321	334	153	160	167	174	18.09	16.91	16.87	16.46
	75	372	391	414	430	193	203	215	224	22.07	21.19	21.04	20.80
	90	476	515	536	563	247	268	279	293	27.70	27.58	27.28	27.12

¹ Number of schools analysed.

Table 5
Fossil fuel consumption and cost per pupil by school type¹
England
1999-00, 2000-01, 2001-02 and 2002-03

Type of school	Fossil Fuel Consumption (corrected for ambient temperature)								Fossil Fuel Cost				
	kWh / pupil				kg CO ₂ / pupil				£ / pupil				
	1999-00	2000-01	2001-02	2002-03	1999-00	2000-01	2001-02	2002-03	1999-00	2000-01	2001-02	2002-03	
Nursery	Number of schools ²	255	276	155	228	255	276	155	228	255	276	155	228
	Percentiles:												
	10	246	332	306	364	47	63	58	69	3.16	4.10	4.26	4.75
	25	520	528	590	636	101	102	116	121	5.25	6.08	7.49	7.69
	50	786	893	1,028	1,041	153	176	201	208	7.82	9.75	12.44	12.90
	75	1,203	1,347	1,783	1,740	229	276	339	345	10.93	15.94	20.64	22.12
90	1,875	2,602	2,642	2,907	383	500	502	552	18.44	24.86	31.35	31.40	
Primary	Number of schools ²	11,445	12,416	10,072	11,010	11,445	12,416	10,072	11,010	11,445	12,416	10,072	11,010
	Percentiles:												
	10	369	256	386	290	79	55	79	58	4.39	4.83	5.55	5.84
	25	620	580	630	611	129	117	128	122	6.13	6.93	8.05	8.45
	50	902	873	920	918	187	177	188	185	8.62	9.95	11.43	11.85
	75	1,287	1,255	1,320	1,335	269	256	272	272	12.36	14.43	16.27	17.00
90	1,786	1,769	1,861	1,901	387	368	389	400	17.83	20.68	22.62	24.12	
Secondary	Number of schools ²	2,141	2,415	1,810	2,019	2,141	2,415	1,810	2,019	2,141	2,415	1,810	2,019
	Percentiles:												
	10	601	543	538	409	124	106	106	85	6.63	6.74	7.77	7.80
	25	987	940	929	898	205	189	190	178	8.93	9.54	11.40	11.61
	50	1,410	1,340	1,348	1,297	291	270	271	260	12.23	13.48	15.80	15.89
	75	1,903	1,818	1,857	1,817	400	367	383	370	16.69	19.31	21.98	22.12
90	2,670	2,539	2,561	2,592	562	530	529	535	23.74	27.09	30.00	30.13	

¹ Figures do not include Liquid Petroleum Gas for 1999-00.

² Number of schools analysed.

Table 6
Total fuel consumption and cost per pupil by school type¹
England
1999-00, 2000-01, 2001-02 and 2002-03

Type of school		Total Fuel Consumption (includes fossil fuel consumption that has been corrected for ambient temperature)								Total Fuel Cost			
		kWh / pupil				kg CO ₂ / pupil				£ / pupil			
		1999-00	2000-01	2001-02	2002-03	1999-00	2000-01	2001-02	2002-03	1999-00	2000-01	2001-02	2002-03
Nursery	Number of schools ²	255	276	155	228	255	276	155	228	255	276	155	228
	Percentiles:												
	10	432	472	510	546	124	118	140	141	10.91	10.50	11.72	12.61
	25	678	706	793	804	164	164	203	208	13.50	13.75	17.29	17.22
	50	942	1,121	1,257	1,299	232	250	316	310	18.16	19.77	26.09	25.76
	75	1,402	1,667	2,121	2,077	337	407	508	508	24.60	33.05	40.70	41.47
90	2,244	2,921	3,171	3,275	504	652	792	773	39.35	48.61	63.05	64.34	
Primary	Number of schools ²	11,445	12,416	10,072	11,010	11,445	12,416	10,072	11,010	11,445	12,416	10,072	11,010
	Percentiles:												
	10	553	493	605	527	149	139	177	165	12.91	13.41	14.48	14.56
	25	806	778	847	828	207	195	233	229	16.22	17.05	18.47	18.63
	50	1,100	1,079	1,160	1,150	273	264	309	304	20.90	22.16	24.08	24.23
	75	1,498	1,484	1,596	1,603	368	358	420	418	27.43	29.80	31.83	32.29
90	2,033	2,047	2,181	2,246	504	490	573	586	37.00	40.07	42.48	43.87	
Secondary	Number of schools ²	2,141	2,415	1,810	2,019	2,141	2,415	1,810	2,019	2,141	2,415	1,810	2,019
	Percentiles:												
	10	834	792	798	710	229	215	240	229	20.96	19.70	20.18	20.57
	25	1,263	1,213	1,233	1,194	325	305	330	333	24.99	24.47	26.26	26.06
	50	1,714	1,663	1,672	1,632	426	400	445	438	30.85	30.62	33.05	32.40
	75	2,246	2,166	2,245	2,225	560	522	587	576	38.20	39.79	41.84	41.47
90	3,072	2,973	2,996	3,142	749	712	774	790	50.54	52.76	54.17	54.12	

¹ Figures do not include Liquid Petroleum Gas for 1999-00.

² Number of schools analysed.

Table 7
Water consumption and cost per m² by school type
England
1999-00, 2000-01, 2001-02 and 2002-03

Type of school	Pool/no pool		Water Consumption				Water Cost			
			m ³ / m ² floor area				£ / m ² floor area			
			1999-00	2000-01	2001-02	2002-03	1999-00	2000-01	2001-02	2002-03
Nursery		Number of schools ¹	278	256	164	208	278	256	164	208
		Percentiles:								
		10	0.35	0.37	0.35	0.41	0.60	0.62	0.60	0.64
		25	0.56	0.57	0.66	0.64	0.94	0.99	1.03	1.08
		50	0.80	0.84	0.91	0.91	1.37	1.42	1.44	1.51
		75	1.16	1.25	1.51	1.41	2.00	1.86	1.97	2.12
	90	1.81	1.89	3.69	2.08	2.70	2.56	3.28	3.07	
Primary	Pool	Number of schools ¹	1,198	1,110	695	787	1,198	1,110	695	787
		Percentiles:								
		10	0.39	0.39	0.38	0.39	0.52	0.51	0.60	0.59
		25	0.53	0.54	0.53	0.53	0.80	0.80	0.85	0.82
		50	0.71	0.73	0.68	0.69	1.12	1.14	1.19	1.15
	75	0.97	1.00	0.99	1.01	1.53	1.50	1.65	1.61	
	90	1.26	1.37	1.50	1.35	2.08	2.01	2.19	2.30	
	No pool	Number of schools ¹	10,865	10,945	8,430	9,897	10,865	10,945	8,430	9,897
		Percentiles:								
		10	0.33	0.35	0.36	0.34	0.46	0.49	0.53	0.48
25		0.47	0.48	0.50	0.49	0.69	0.71	0.76	0.71	
50		0.65	0.67	0.69	0.68	1.02	1.03	1.06	1.02	
75	0.94	0.96	1.02	0.98	1.43	1.45	1.46	1.44		
90	1.36	1.41	1.57	1.46	1.94	1.96	2.02	2.05		
Secondary	Pool	Number of schools ¹	352	389	274	303	352	389	274	303
		Percentiles:								
		10	0.24	0.27	0.23	0.28	0.41	0.40	0.32	0.35
		25	0.37	0.40	0.38	0.41	0.60	0.61	0.59	0.57
		50	0.52	0.59	0.55	0.57	0.86	0.88	0.84	0.85
	75	0.75	0.85	0.87	0.81	1.19	1.20	1.15	1.18	
	90	1.02	1.15	1.27	1.19	1.48	1.52	1.53	1.70	
	No pool	Number of schools ¹	1,805	1,795	1,356	1,625	1,805	1,795	1,356	1,625
		Percentiles:								
		10	0.22	0.23	0.22	0.21	0.32	0.31	0.31	0.30
25		0.32	0.33	0.32	0.31	0.48	0.48	0.49	0.46	
50		0.45	0.45	0.45	0.45	0.71	0.70	0.70	0.69	
75	0.64	0.66	0.64	0.66	1.03	1.01	0.95	0.98		
90	0.96	0.98	0.97	0.96	1.43	1.40	1.32	1.40		

¹ Number of schools analysed.

Table 8
Water consumption and cost per pupil by school type
England
1999-00, 2000-01, 2001-02 and 2002-03

Type of school	Pool/no pool	Water Consumption				Water Cost					
		m ³ / pupil				£ / pupil					
		1999-00	2000-01	2001-02	2002-03	1999-00	2000-01	2001-02	2002-03		
Nursery		Number of schools ¹	278	256	164	208	278	256	164	208	
		Percentiles:									
		10	1.45	1.50	1.82	1.80	2.52	2.64	2.90	3.11	
		25	2.05	2.19	2.70	2.89	3.29	3.94	4.47	4.54	
		50	2.86	3.41	4.28	4.21	4.97	5.45	6.47	6.52	
		75	4.70	5.27	7.38	6.52	7.46	8.18	9.79	10.66	
	90	7.00	8.41	13.41	11.94	11.33	12.15	16.30	16.40		
Primary	Pool	Number of schools ¹	1,198	1,110	695	787	1,198	1,110	695	787	
		Percentiles:									
		10	2.39	2.35	2.49	2.48	3.27	3.14	3.88	3.64	
		25	3.10	3.10	3.19	3.22	4.73	4.68	5.29	5.13	
		50	4.24	4.31	4.35	4.48	6.61	6.69	7.47	7.39	
		75	5.72	6.13	6.41	6.37	9.12	9.42	10.28	10.58	
		90	7.71	8.67	9.84	9.44	12.19	12.60	14.96	15.22	
		No pool	Number of schools ¹	10,865	10,945	8,430	9,897	10,865	10,945	8,430	9,897
			Percentiles:								
			10	1.87	2.02	2.15	2.08	2.61	2.77	3.11	2.81
			25	2.61	2.73	2.90	2.87	3.89	4.08	4.45	4.23
		50	3.68	3.80	4.03	4.02	5.73	5.88	6.16	6.03	
		75	5.33	5.57	6.07	6.00	8.17	8.32	8.66	8.63	
		90	7.78	8.35	9.50	9.22	11.30	11.66	12.38	12.65	
Secondary	Pool	Number of schools ¹	352	389	274	303	352	389	274	303	
		Percentiles:									
		10	2.17	2.41	2.38	2.40	3.87	3.47	3.37	3.27	
		25	3.34	3.59	3.56	3.71	5.42	5.50	5.57	5.34	
		50	4.85	5.08	5.06	5.08	7.92	7.90	8.04	7.43	
		75	7.04	7.49	8.12	7.66	10.79	10.86	10.43	10.54	
		90	9.72	10.79	12.77	10.26	15.20	13.69	15.62	15.23	
		No pool	Number of schools ¹	1,805	1,795	1,356	1,625	1,805	1,795	1,356	1,625
			Percentiles:								
			10	1.91	1.91	1.86	1.86	2.75	2.71	2.66	2.61
			25	2.73	2.68	2.76	2.67	4.10	4.06	4.34	3.96
		50	3.82	3.86	3.96	3.82	6.16	6.00	6.16	5.89	
		75	5.79	5.76	6.05	5.76	9.20	8.94	8.53	8.51	
		90	8.66	8.64	8.62	8.49	12.95	12.36	12.42	12.78	

¹ Number of schools analysed.

Table 9
Energy consumption per m² floor area by Government Office Region
2002-03

	Electricity					Fossil Fuel (corrected for ambient temperature)					Total (includes fossil fuel consumption that has been corrected for ambient temperature)					Schools ¹
	kWh / m ² floor area					kWh / m ² floor area					kWh / m ² floor area					
	10	25	50	75	90	10	25	50	75	90	10	25	50	75	90	
Primary																
England	18	27	37	50	69	50	112	158	209	271	93	151	199	250	319	11,010
North East	21	27	35	44	56	108	133	164	201	245	141	170	201	239	282	719
North West	20	29	39	50	64	85	122	156	199	252	120	163	200	244	298	1,210
Yorkshire and the Humber	15	26	38	54	75	50	115	163	216	273	92	156	206	261	328	1,745
East Midlands	22	31	41	54	72	18	111	161	213	285	79	148	204	260	339	1,266
West Midlands	19	29	39	53	75	77	116	171	242	329	116	159	215	284	385	1,263
Eastern	14	22	32	46	64	28	108	163	214	276	74	145	197	248	310	1,150
London	13	25	35	47	63	12	104	178	241	317	48	138	213	281	366	804
South East	16	24	33	46	62	42	118	161	200	243	95	155	196	237	281	1,672
South West	22	30	39	57	89	24	81	123	164	211	78	125	167	212	292	1,181
Secondary																
England	20	31	39	49	62	45	112	155	204	270	81	147	194	249	323	2,019
North East	27	33	40	47	57	109	131	163	200	229	142	167	201	241	276	139
North West	30	35	44	57	68	64	115	145	180	245	98	159	196	229	309	214
Yorkshire and the Humber	3	19	35	44	59	31	99	156	204	283	57	143	188	252	325	284
East Midlands	29	35	44	54	67	50	115	167	220	296	89	162	209	265	349	216
West Midlands	22	31	39	50	58	45	104	151	208	278	81	141	187	245	328	314
Eastern	13	24	34	43	56	50	104	158	217	286	78	134	191	259	331	255
London	10	33	43	54	72	27	104	185	265	360	46	139	235	307	433	165
South East	22	31	37	46	59	60	118	158	199	234	104	158	197	239	282	247
South West	25	31	37	45	69	30	99	127	164	199	66	136	167	208	283	185

¹ Number of schools analysed.

Table 10
Energy cost per m² floor area by Government Office Region
2002-03

Percentiles:	Electricity £ / m ² floor area					Fossil £ / m ² floor area					Total £ / m ² floor area					Schools ¹
	10	25	50	75	90	10	25	50	75	90	10	25	50	75	90	
Primary																
England	0.96	1.42	1.98	2.68	3.60	1.08	1.52	2.04	2.66	3.40	2.61	3.32	4.11	5.12	6.44	11,010
North East	1.33	1.67	2.18	2.75	3.51	1.41	1.75	2.17	2.65	3.25	3.20	3.70	4.36	5.26	6.19	719
North West	1.15	1.60	2.11	2.75	3.42	1.16	1.58	2.04	2.63	3.22	2.78	3.50	4.29	5.12	6.14	1,210
Yorkshire and the Humber	0.80	1.35	1.95	2.70	3.79	0.92	1.57	2.13	2.76	3.44	2.54	3.34	4.19	5.19	6.42	1,745
East Midlands	1.00	1.43	1.97	2.66	3.46	1.18	1.58	2.11	2.70	3.32	2.59	3.28	4.18	5.13	6.28	1,266
West Midlands	1.00	1.43	2.01	2.79	3.83	1.08	1.60	2.23	2.91	3.77	2.68	3.43	4.31	5.43	6.86	1,263
Eastern	0.93	1.38	1.84	2.48	3.48	1.05	1.36	1.77	2.45	3.26	2.38	2.99	3.76	4.87	6.20	1,150
London	0.80	1.34	1.92	2.61	3.53	0.97	1.56	2.11	2.72	3.49	2.33	3.33	4.10	5.23	6.57	804
South East	0.78	1.20	1.71	2.36	3.14	1.25	1.65	2.10	2.78	3.86	2.71	3.22	3.90	4.85	6.91	1,672
South West	1.24	1.63	2.21	3.05	4.18	0.81	1.20	1.64	2.20	2.90	2.58	3.24	4.05	5.08	6.27	1,181
Secondary																
England	1.17	1.55	1.92	2.37	2.91	0.97	1.40	1.87	2.44	3.12	2.53	3.16	3.83	4.63	5.60	2,019
North East	1.48	1.73	2.16	2.56	3.07	1.38	1.60	1.97	2.54	2.95	3.12	3.54	4.09	4.96	5.69	139
North West	1.44	1.69	2.02	2.41	3.09	1.19	1.54	1.94	2.39	3.21	2.96	3.54	3.96	4.75	5.90	214
Yorkshire and the Humber	1.02	1.46	1.88	2.22	2.72	0.44	1.23	1.91	2.64	3.33	2.15	2.95	3.78	4.64	5.60	284
East Midlands	1.34	1.63	1.95	2.43	2.85	1.08	1.49	1.99	2.51	3.35	2.63	3.38	4.02	4.81	5.62	216
West Midlands	1.17	1.59	1.97	2.44	2.91	0.89	1.35	1.86	2.48	3.40	2.51	3.08	3.78	4.77	5.96	314
Eastern	0.68	1.36	1.78	2.26	2.78	0.99	1.32	1.67	2.22	2.78	2.42	2.85	3.51	4.24	5.09	255
London	0.96	1.69	2.16	2.70	3.70	0.75	1.56	2.02	2.80	3.71	2.28	3.54	4.33	5.24	6.58	165
South East	1.05	1.44	1.78	2.17	2.72	1.14	1.53	1.96	2.44	2.85	2.66	3.13	3.75	4.44	5.30	247
South West	1.28	1.59	1.86	2.27	2.74	1.02	1.23	1.60	1.97	2.49	2.63	3.02	3.51	4.13	4.94	185

¹ Number of schools analysed.

Table 11
Water consumption and cost per pupil by Government Office Region
2002-03

Percentiles:	Water Consumption					Water Cost					Schools ¹
	m ³ / pupil					£ / pupil					
	10	25	50	75	90	10	25	50	75	90	
Primary											
England	2.11	2.89	4.05	6.03	9.23	2.87	4.29	6.11	8.77	12.84	10,684
North East	2.43	3.14	4.12	5.58	7.56	3.75	4.90	6.23	7.89	10.07	717
North West	1.84	2.68	3.66	5.04	7.48	2.69	3.86	5.53	8.49	12.49	870
Yorkshire and the Humber	2.19	3.26	4.65	7.10	10.16	2.78	4.57	6.53	8.95	11.98	1,810
East Midlands	1.87	2.72	4.18	7.11	12.71	2.39	4.12	6.31	9.68	15.93	1,342
West Midlands	2.24	3.06	4.39	6.47	9.52	2.82	4.30	6.21	9.20	13.42	1,140
Eastern	2.31	2.85	3.74	5.15	7.46	3.42	4.67	6.22	8.48	11.62	1,108
London	2.21	3.21	4.69	6.74	10.58	3.07	3.94	5.55	8.07	11.78	733
South East	2.32	3.02	4.09	6.22	9.17	3.15	4.17	5.70	8.13	11.64	1,682
South West	1.72	2.40	3.18	4.61	6.88	2.41	4.07	6.47	10.70	16.74	1,282
Secondary											
England	1.91	2.77	4.03	6.02	8.82	2.67	4.14	6.10	8.83	13.11	1,928
North East	1.81	2.72	3.99	5.87	7.72	3.04	5.06	6.70	8.31	10.50	132
North West	1.70	2.27	3.16	4.15	6.89	2.20	3.03	4.54	8.45	14.43	138
Yorkshire and the Humber	1.92	2.95	4.34	6.84	9.15	2.42	3.99	5.93	8.44	11.98	279
East Midlands	1.98	2.98	4.37	7.59	12.03	3.62	5.35	7.83	12.11	18.10	236
West Midlands	2.05	2.99	4.47	6.77	8.88	2.55	4.05	6.40	9.27	12.64	251
Eastern	1.90	2.76	3.80	5.65	8.43	2.91	4.52	6.08	8.32	13.16	239
London	1.40	2.76	4.30	5.82	7.51	2.00	3.38	5.24	6.57	8.88	152
South East	2.24	3.00	4.53	6.75	9.47	2.93	4.06	5.79	8.26	11.53	315
South West	1.56	2.42	3.24	4.39	6.27	2.03	4.22	6.11	10.47	18.96	186

¹ Number of schools analysed.

Table 12
Carbon emissions produced from energy use in schools
England
2001-02 and 2002-03

Type of school		Electricity Consumption				Fossil Fuel Consumption (corrected for ambient temperature)				Total Fuel Consumption (includes fossil fuel consumption that has been corrected for ambient temperature)			
		kg C / m ² floor area		kg C / pupil		kg C / m ² floor area		kg C / pupil		kg C / m ² floor area		kg C / pupil	
		2001-02	2002-03	2001-02	2002-03	2001-02	2002-03	2001-02	2002-03	2001-02	2002-03	2001-02	2002-03
Nursery	Number of schools ¹	155	228	155	228	155	228	155	228	155	228	155	228
	Percentiles:												
	10	2.48	2.05	9.38	9.25	4.55	5.91	16.23	19.31	9.44	9.76	34.79	35.60
	25	3.31	3.14	13.72	13.84	7.83	8.36	32.22	33.86	13.24	13.18	51.51	54.38
	50	4.84	4.85	22.10	20.61	12.03	12.45	56.18	57.90	17.86	17.91	82.44	79.33
	75	7.24	7.58	38.09	38.88	17.14	19.02	94.51	96.25	23.76	25.33	132.54	132.77
90	13.39	11.68	63.47	61.84	24.96	25.49	140.00	154.10	33.34	33.50	211.28	199.27	
Primary	Number of schools ¹	10,072	11,010	10,072	11,010	10,072	11,010	10,072	11,010	10,072	11,010	10,072	11,010
	Percentiles:												
	10	1.95	2.00	12.19	12.32	3.69	2.85	21.96	16.31	7.74	7.20	44.05	40.16
	25	2.91	3.00	17.44	17.75	6.48	6.26	35.51	34.06	10.55	10.45	58.85	57.74
	50	4.11	4.18	24.10	24.78	9.02	8.87	52.42	51.48	13.48	13.35	78.93	77.63
	75	5.63	5.66	33.67	34.29	12.07	11.85	75.80	75.81	17.21	16.82	108.05	107.58
90	7.97	7.76	48.41	48.69	16.30	15.81	108.73	111.63	22.21	21.75	148.45	151.72	
Secondary	Number of schools ¹	1,810	2,019	1,810	2,019	1,810	2,019	1,810	2,019	1,810	2,019	1,810	2,019
	Percentiles:												
	10	1.86	2.20	15.68	18.38	3.55	2.61	29.54	23.57	6.99	6.54	58.35	55.71
	25	3.10	3.45	28.00	29.34	6.26	6.15	52.74	49.68	9.86	10.21	84.45	83.52
	50	4.13	4.39	36.24	37.72	8.68	8.66	75.43	72.44	12.95	13.19	113.10	110.93
	75	5.21	5.58	46.81	48.63	11.69	11.56	106.91	103.33	16.29	16.67	150.43	147.99
90	6.66	7.03	60.52	63.65	15.39	15.58	149.34	149.42	20.86	21.28	199.06	206.24	

¹ Number of schools analysed.

Annex

Technical note

Energy consumption

Units of measurement

School energy consumption and cost per year were measured in units of kilowatt hours (kWh) and £ respectively. Energy consumption was also converted to carbon dioxide (CO₂) equivalent units and carbon (C) equivalent units using the conversion factors shown here:

Fuel Type	Consumption (kWh)	CO ₂ conversion factor*	Total CO ₂ (kg)	C conversion factor**	Total C (kg)
Electricity	A	0.52	0.52*A	0.113	0.113*A
Gas	B	0.19	0.19*B	0.053	0.053*B
Oil	C	0.27	0.27*C	0.074	0.074*C
Coal	D	0.29	0.29*D	0.086	0.086*D
LPG	E	0.22	0.22*E	0.068	0.068*E

* Reference: Emissions factors for delivered energy use in the UK 2001, BRE

** Reference: Building regulations 2000, part L2

School energy consumption and cost per year were then divided by floor area and the number of pupils and expressed in terms of:

kWh/m² floor area, kg CO₂/m² floor area, £/m² floor area, kg C/ m² floor area, and

kWh/pupil, kg CO₂/pupil, £/pupil, kg C/pupil.

Data Analysis

Schools were excluded from the energy consumption and cost analysis unless they had non-zero values for both energy consumption and cost for electricity and at least one fossil fuel, floor area and number of pupils.

Correction for Ambient Temperature

Figures for fossil fuel consumption were corrected for ambient temperature. Differences in temperature across the country can affect the amount of fuel required for heating. England is divided into Degree Day Regions. In each region, for every day that the temperature falls below 15.5 degrees Celsius the magnitude of the difference was recorded. These deviations are aggregated over the relevant year. The 20 year national average using this method is 1913.

The following calculation was carried out on each school;

$(\text{Fossil fuel consumption} * 0.75 * (1913/DD)) + (\text{Fossil fuel consumption} * 0.25),$

where DD is the sum of the deviations below 15.5 degrees over the year.

The following table shows the degree day values for each year and region and the region for each postcode. For each school, the postcode identifies the region and, hence, the appropriate Degree Day value.

Degree day regions

Post code	Region	Post code	Region	Post code	Region
AL	Thames Valley	HD	East Pennines	RM	Thames Valley
B	Midland	HG	North Eastern	S	East Pennines
BA	Southern	HP	Thames Valley	SA	Wales
BB	North Eastern	HR	Midland	SE	Thames Valley
BD	North Eastern	HU	East Pennines	SG	Thames Valley
BH	Southern	HX	West Pennines	SK	West Pennines
BL	West Pennines	IG	Thames Valley	SL	Thames Valley
BN	South Eastern	IM	North Western	SM	South Eastern
BR	South Eastern	IP	East Anglia	SN	Southern
BS	Severn Valley	KT	South Eastern	SO	Southern
CA	North Western	L	West Pennines	SP	Southern
CB	East Anglia	LA	North Western	SR	North Eastern
CF	Severn Valley	LD	Wales	SS	East Anglia
CH	West Pennines	LE	Midland	ST	Midland
CM	East Anglia	LL	Wales	SW	Thames Valley
CO	East Anglia	LN	East Pennines	SY	Wales
CR	South Eastern	LS	North Eastern	TA	Severn Valley
CT	South Eastern	LU	Thames Valley	TD	Borders
CV	Midland	M	West Pennines	TF	Midland
CW	West Pennines	ME	South Eastern	TN	South Eastern
DA	South Eastern	MK	Thames Valley	TQ	South Western
DE	Midland	N	Thames Valley	TR	South Western
DG	North Western	NE	Borders	TS	North Eastern
DH	North Eastern	NG	East Pennines	TW	South Eastern
DL	North Eastern	NN	Midland	UB	Thames Valley
DN	East Pennines	NP	Severn Valley	W	Thames Valley
DT	Southern	NR	East Anglia	WA	West Pennines
DY	Midland	NW	Thames Valley	WC	Thames Valley
E	Thames Valley	OL	West Pennines	WD	Thames Valley
EC	Thames Valley	OX	Thames Valley	WF	East Pennines
EN	Thames Valley	PE	East Pennines	WN	West Pennines
EX	South Western	PL	South Western	WR	Midland
FY	West Pennines	PO	Southern	WS	Midland
GL	Severn Valley	PR	West Pennines	WV	Midland
GU	Southern	RG	Thames Valley	YO	North Eastern
HA	Thames Valley	RH	South Eastern		

Region	Degree Days			
	1999-00	2000-01	2001-02	2002-03
Borders	1848	2114	1897	1944
East Anglia	1834	1983	1809	1866
East Pennines	1805	2030	1807	1880
Midland	1801	2057	1808	1875
North Eastern	1879	2183	1918	2025
North Western	1921	2265	2037	2103
Severn Valley	1471	1642	1562	1665
South Eastern	1788	1950	1749	1813
South Western	1456	1581	1396	1412
Southern	1692	1885	1722	1599
Thames Valley	1536	1708	1517	1540
Wales	1671	1903	1620	1688
West Pennines	1723	1986	1755	1793

Water

Units of measurement

Water consumption and cost per year were measured in units of m^3 and £ respectively. Water consumption and cost were then divided by the floor area and the number of pupils and expressed in terms of:

m^3/m^2 floor area, £/ m^2 floor area, and

m^3/pupil , £/pupil.

Data Analysis

Schools were excluded from the water consumption and cost analysis unless they had non-zero values for water consumption and cost, floor area and number of pupils.