Energy efficiency in schools

1. Purpose of the Report

1.1 This report updates the Schools Forum on carbon emissions data for 2013/14 and offers an opportunity to identify follow up activity for schools individually and collectively.

2. Recommendation

- **2.1** The Schools Forum is invited to:
 - Discuss the data presented in Appendices 1 and 2
 - Use the form provided at Appendix 4 to request follow up support and information
 - ➤ Agree the proposal to spend £2,750 to create a portal for schools to use to access energy management data

3. Summary

- 3.1 On the 20th March the Schools Forum approved the Council's draft Energy Policy and the inclusion of a target for a 20% reduction in carbon emissions per pupil across the schools estate over the period 2012/13-2017/18.
- 3.2 As noted in the report prepared for that meeting, carbon emissions are a good proxy for energy expenditure as well as a measure of environmental impact.
- 3.3 At the 20th March meeting the Schools Forum requested a report for the first year's data setting out the figures for all schools. A table with this information is enclosed at Appendix A.
- 3.4 It is important to note that the table does not equate to performance on energy. The schools estate includes a range of very different buildings and individual schools are often restricted in what they can do. The purpose of this report is to encourage all schools to identify areas where they can take action and to identify individual and collective opportunities to respond to some of the constraints to driving energy efficiency.
- 3.5 This report sets out existing, and some potentially additional opportunities for schools in improving energy efficiency and reducing carbon emissions:
 - > School access to energy data
 - > Sharing of existing good practice in schools
 - Energy audits
 - Sources of up front funding for energy efficiency works including SALIX loan

- Procurement options including the RE:FIT framework
- Renewables
- > Staff and pupil engagement

4. Schools consumption data

Progress against target

- **4.1** The Council introduced a new Energy Policy in 2014 with a target to reduce emissions from per pupil from school sites by 20% over 5 years from 2012-13 to 2017-18.
- 4.2 Across school sites (not including academies or pupil referral units) there has been a 9% reduction in total emissions per pupil from 2012-13 to 2013-14. This figure has been calculated using Defra conversion factors for CO₂ emissions per kWh and using the schools summer roll figures of 33,930 pupils in 2012-13 and 34,762 in 2013-14.

Notes on CO₂ emissions data

- 4.3 The table in Appendix 1 shows all schools divided into Primary, Secondary and Special schools and ranked by carbon emissions per pupil (carbon emissions are from electricity and gas consumption only). Schools have been spilt in this way because secondary and special schools tend to have higher emissions per pupil than primary schools.
- 4.4 Column 1 shows the rank for 2013-14. Column 3 shows the carbon emissions for the financial year 2013-14, using predominantly the figures calculated for Carbon Reduction Commitment (CRC) legislation and supplemented by additional data from council greenhouse gas reporting for the small number of supplies that do not fall under the legislation. CRC conversion factors have been used to calculate the emissions from consumption figures in kWh (these are slightly different to Defra conversion factors used for the progress against the target but the difference is not significant).
- 4.5 Column 4 shows the number of pupils registered for each school in the summer of 2013. The summer term figure has been used in order to give the best proxy for the whole financial year April to March. Column 5 shows the figure for emissions per pupil calculated from columns 3 and 4. It is this figure that has been used to order the table. Column 6 shows the change in emissions per pupil from 2012-13 to 2013-14.

- 4.6 Column 7 shows the approximate build date of the main building at the school. Where there are 2 or more substantial buildings at a school of different build dates the first and last build dates have been given. It would generally be expected that newer buildings would have better insulation than older buildings and would therefore use less energy, but there are also other factors to take into account such as building construction, refurbishments, ventilation and air conditioning requirements and the amount of technology installed (for example newer buildings might make more use of IT and use more electricity).
- **4.7** For a small number of schools data was missing or there is a suspected fault with the meter which is being investigated and therefore data has been estimated using a previous year's data. This estimated data has been identified within the tables.

Water data

- **4.8** Using data from Thames Water we have carried out a basic desktop analysis on water consumption patterns in Lewisham schools. The data is a mix of actual meter readings and estimated readings and therefore isn't completely accurate. The results are summarised in Appendix 2.
- 4.9 Typical benchmarks for schools on water consumption are 3.99m³/pupil in Primary Schools and 4.6 m³/pupil in Secondary Schools. If a school is using an above average amount of water it would suggest there is an underlying issue (such as a leak) which should be resolved as soon as possible. Lewisham Council is happy to provide advice and guidance to schools on how resolve any water issues identified.

5. Future data collection requirements

- 5.1 Data for the schools was gathered primarily for the purpose of Carbon Reduction Commitment (CRC) legislation reporting. From 2014-15 onwards Lewisham Council is no longer required to report for this legislation, so alternative data collection arrangements need to be made.
- **5.2** For schools with supplies on the council's corporate contracts data is readily available and can be collected with ease.
- 5.3 For schools with some supplies not on the council's corporate contracts this data can only be obtained from the supplier by the Sustainable Resources team if a valid Letter of Authority (LOA) is provided by the school authorising Sustainable Resources to view data.

5.4 Schools with supplies not on the council's corporate contracts are therefore requested to complete a Letter of Authority authorising Sustainable Resources to access data for the purpose of reporting on schools carbon emissions. Requests will be sent out during the autumn term.

6. Opportunities to improve energy efficiency

Improved energy data

- 6.1 Schools are currently unable to view the data that the Sustainable Resources team is collecting relating to energy consumption. This data includes invoices, meter readings and half-hourly readings from automated meter reader (AMR) equipment. Access to this data could assist schools in monitoring energy consumption and spend on energy.
- 6.2 Access to better data gives school business managers and premises officers an evidenced-based understanding of energy consumption, which should help schools to understand where improvements can be made and manage costs.
- 6.3 This could be provided through an upgrade to the council's energy management database that would give all schools access to their energy data through a web portal. The quoted cost for this upgrade is £2,750but there is no budget to support the cost of this upgrade. Subject to the views of the Schools Forum it is proposed that this could be funded from a top-slice of schools funding.

Good practice

6.4 A number of schools are already taking action on energy efficiency and carbon reduction. Schools are invited to identify where there may be opportunities for learning and officers from the Sustainable Resources Group can coordinate sharing of existing good practice.

Energy audits

- 6.5 Schools with supplies on the corporate energy contracts schools can request an energy audit from the Sustainable Resources Group. These audits are intended to identify opportunities for energy efficiency and resolve issues with unexplained consumption.
- Audits are available on request but are prioritised based on consumption issues (i.e. a site with high unexplained consumption would be prioritised).

Salix funding

6.7 One of the biggest barriers to addressing energy issues are the costs of measures. Salix Finance offer interest free loans to the public sector for energy retrofit works, and include a specific schools fund. Loans tend to be between £100,000 to £1m. The Sustainable Resources Group would be happy to work with schools to develop a bid for Salix funding.

RE:FIT framework

- 6.8 RE:FIT is a procurement framework established by the Greater London Authority for energy retrofit works in the public sector. RE:FIT can be used in collaboration with Salix.
- 6.9 One of the central features of RE:FIT is that bidders on the framework guarantee the level of energy savings that are delivered. This helps provide greater levels of assurance that for example can help secure funding.
- **6.10** A Lewisham RE:FIT project would require a certain scale of activity to be viable equating to approximately £1m expenditure. Individual schools can also apply separately to the London scheme.
- **6.11** The Sustainable Resources Group would be happy to work with schools to develop a RE:FIT bid.

Renewables

- 6.12 Renewable energy technologies offer the opportunity to generate free energy that can be used on site. They can also provide an income stream through the feed-in-tariff and renewable heat incentive.
- 6.13 These income streams have created alternative means of financing renewables including roof leasing offers for solar PV installations where a third party provides the funding.
- 6.14 These third-party financed offers have legal and financial implications, and where they place a charge or legal restriction on the property should only be entered into with the appropriate agreements in place.
- 6.15 The Sustainable Resources Group is able to offer advice on offers schools may have received and can provide alternative quotes for the costs of PV systems. The Sustainable Resources Group can also explain alternative ways

of raising capital including through fundraising programmes as well as crowd sourcing investment.

Staff and pupil engagement

- 6.16 Under the Council's Clean and Green Schools programme the Council supports the costs of energy efficiency themed assemblies for schools through a company called ECO Active. These assemblies are intended to raise awareness of energy efficiency with children and adults at the school and can lead to follow-up activity such as pupil led energy audits and energy saving campaigns. Schools interested in this offer are invited to come forward.
- efficiency performance of the school, with up to 10% reductions in energy achieved in successful projects. In secondary schools these can also take on a vocational element providing training in entry level energy management activity. This type of activity requires a focused and time intensive approach that would be outside the scope of existing resources. However the Sustainable Resources Group would be keen to speak with any schools interested in developing this further.
- 6.18 The Sustainable Resources Group is developing a package of training for premises officers expected to be ready form the end of 2014. Schools interested in participating in this are invited to come forward.

Actions for the Schools Forum

- 6.19 The Schools Forum is invited to decide whether the upgrade to the energy management database to include a web portal should be progressed.
- **6.20** Schools individually and collectively are invited to identify in Appendix 3 whether they are interested in following up on the following:
 - Case studies and examples of good practice
 - Energy audits
 - Salix funding
 - ➤ RE:FIT framework
 - > Renewables
 - Staff and pupil engagement
- 6.21 In some cases, particularly on audits and pupil engagement, demand will have to be matched to the available resources, but we will be able to gauge this once schools have identified their requirements.

6.22 In other cases – particularly Salix funding and RE:FIT we will need a certain level of demand in order to have a viable project.

7. Conclusion

- **7.1** The Schools Forum is invited to:
 - Discuss the data presented in Appendices 1 and 2
 - Use the form provided at Appendix 4 to request follow up support and information
 - ➤ Agree the proposal to spend £2,750to create a portal for schools to use to access energy management data

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School CO₂ Emissions per Pupil (2013/14)

	School	CO ₂ Emissions (kg)	Pupil places	CO ₂ Emissions per pupil (kg/pupil)	Change in emissions per pupil from last year	Build date (approx.)
	Primary School					
1	St. Bartholomew's Primary	51,616 ²	303	170	-32	1969
2	St. Winifred's Infants	32,200	177	182	-3	1870
3	Holy Cross Primary	47,534	261	182	-16	1974
4	St. William of York Primary	52,381	279	188	-37	1970
5	Stillness Junior and Infants School	122,368	635	193	-104	1905
6	St. Saviour's Primary	48,831	236	207	-43	1910/2001
7	Brindishe Lee Primary	60,425	279	217	-20	1976
8	Eliot Bank Primary	119,893	551	218	-17	1957
9	Holbeach Primary	110,388 ¹	500	221	-29	1901
10	Marvels Lane Primary	95,180	425	224	-43	1930
11	Brindishe Green Primary	145,807	646	226	-56	1885
12	St. Margaret's Lee Primary	52,979	232	228	-17	1963
13	Baring Primary	63,190	274	231	-21	1883
14	Rathfern Primary	112,891	489	231	-81	1888
15	Coopers Lane Primary	130,681	542	241	-46	1936
16	Dalmain Primary	100,761	415	243	-22	1928
17	Myatt Garden Primary	129,963	522	249	-90	1971
18	Holy Trinity Sydenham Primary	48,579	193	252	-53	1974/1998
19	Launcelot Primary	112,451	445	253	-60	1928
20	Deptford Park Primary	160,881	634	254	-85	1884/1968
21	Ashmead Primary	79,007	309	256	+10	2009
22	Chelwood Nursery School	34,550	132	262	-43	1938
23	Sandhurst Junior and Infants	180,818	678	267	+7	1904/1953
24	All Saints Blackheath Primary	56,303	209	269	-63	1880
25	St. Stephen's Primary	76,544	284	270	-23	1868
26	Haseltine Primary	107,599	398	270	-72	1890
27	St. Joseph's Primary	75,371	278	271	-71	1866
28	Fairlawn Primary (2 sites)	143,839	528	272	-11	1957
29	Our Lady & St. Philip Neri (2 sites)	93,754	344	273	-35	1940
30	St. Augustine's Primary	66,037	241	274	+1	1930
31	Childeric Primary	130,461	476	274	-14	2006
32	St. John The Baptist Primary	57,742	210	275	-35	1963
33	Grinling Gibbons Primary	86,502	306	283	-72	1950
34	John Ball Primary	148,241	518	286	-14	1953
35	Rushey Green Primary	174,305	602	290	-36	2010
36	Rangefield Primary	130,929	449	292	-27	1926
37	Adamsrill Primary	166,228	567	293	+1	1922

	School	CO ₂ Emissions	Pupil places	CO ₂ Emissions	Change in s emissions	Build date (approx.)
63	Clyde Early Childhood Centre	84,474	109	775	-55	1972
62	Forster Park Primary	214,738	496	433	+15	1952
61	Elfrida Primary	172,833	415	416	-26	1924
60	St. Michaels Sydenham Primary	90,377	221	409	+18	1871/1891
59	Beecroft Garden Primary	123,173	312	395	-98	2012
58	Kilmorie Primary School & PDC	169,870	444	383	-56	1903
57	St. Winifred's Juniors	65,640	175	375	-56	1960
56	Perrymount Primary	92,889	254	366	-34	1994
55	Kelvin Grove Primary	203,656	565	360	-19	1876
54	Kender Primary	127,385	354	360	+11	1930/2012
53	Turnham Primary	189,519	536	354	-66	1935
52	Lucas Vale Primary	135,313⁵	384	352	-49	1879
51	Horniman Primary	77,255	231	334	-61	1971
50	Athelney Primary	168,100 ⁴	511	329	-66	1922/1950
49	St. Mary's Primary	85,426	260	329	-71	1860/1950
48	St. James Hatcham Primary	78,260	239	327	-29	1975
47	Gordonbrock Primary	184,371	574	321	+15	2012
46	St. Mary Magdalen Primary	62,687	197	318	+37	1880/2000
45	Lee Manor Primary	151,504	477	318	-66	1911
44	Downderry Primary	159,192 ³	503	316	+19	1927
43	Sir Francis Drake Primary	63,141	204	310	-31	1963
42	John Stainer Primary	91,420	297	308	-30 +34	1882
41	Edmund Waller Primary	140,590	461	305	-30	1888/1972
40	Torridon Junior and Infants School	213,939	704	304	-56 +6	1906/2012
39	Christ Church Primary	74,049	245	302	-19 -58	1953
38	Good Shepherd Primary	82,816	275	301	-19	1930

	School	CO ₂ Emissions (kg)	Pupil places	CO ₂ Emissions per pupil (kg/pupil)	Change in emissions per pupil from last year	Build date (approx.)
	Secondary School					
1	Sydenham Secondary	581,003	1,360	427	-9	1960
2	Deptford Green Secondary -	454,995	959	474		2012
	(Includes old and new sites)				+53	
3	Sedgehill College	781,663	1,379	567	-282	2008
4	Addey and Stanhope Secondary	343,025	597	575	-179	1900/2012
5	Conisborough College	498,596	850	587	-71	2009
6	Bonus Pastor College (2 sites)	457,684	760	602	+74	2012
7	Forest Hill Secondary	886,654	1,421	624	-86	2006
8	Prendergast Hilly Fields College	660,092	862	766	+80	1890/2012
9	Trinity Secondary (2 sites)	454,221	539	843	-202	2010
10	Prendergast Ladywell Fields College	778,710	863	902	-30	2007
11	Prendergast Vale College	530,050	516	1,027	+403	1914/2012
	School	CO ₂ Emissions (kg)	Pupil places	CO ₂ Emissions per pupil (kg/pupil)	Change in emissions per pupil from last year	Build date (approx.)

Special School

1	Brent Knoll Special School	115,961	149	778	-72	1970
2	New Woodlands Special School	122,277	140	873	+153	1980/2006
3	Drumbeat Downham Special School - (Brockley and Downham Sites)	281,119	157	1,791	+978	2013/1970
4	Greenvale Special School	263,112	109	2,414	+5	2007
5	Watergate Special School	250,598	91	2,754	+42	2003

¹ Missing data for one meter – estimated consumption ² Electricity meter fault – used last available data for that meter ³ Electricity meter fault – used last year's data for that meter

⁴ Electricity meter fault – used last year's data for meter ⁵ Missing data for one meter – estimated consumption

School Water Consumption (2013/14)

Name		Pupils	Water consumption ¹ (m³)	Relative consumption (m³/pupil)	Performance ²
1	Downderry Primary	503	456	0.91	Very good
2	Hatcham College	1809	2035	1.12	Very good
3	Turnham Primary	536	756	1.41	Very good
4	Sandhurst Junior and Infants School	678	1358	2.00	Good
5	Baring School Primary	274	572	2.09	Good
6	Our Lady & St Philip Neri Primary	344	750	2.18	Good
7	Kender Primary	354	779	2.20	Good
8	Beecroft Garden Primary	312	707	2.27	Good
9	Bonus Pastor RC Secondary	759	1906	2.51	Good
10	Ashmead Primary	309	790	2.56	Good
11	Marvels Lane Primary	424	1163	2.74	Good
12	St Mary Magdalen RC Primary	197	551	2.80	Good
13	St Winifreds RC Primary	352	1022	2.90	Good
14	St Stephens CE Primary	284	893	3.14	Good
15	Forest Hill Secondary	1417	4572	3.23	Good
16	Athelney Primary	510	1657	3.25	Good
17	Rushey Green Primary	602	2140	3.55	Good
18	Dalmain Primary School	415	1488	3.59	Good
19	Deptford Park Primary	634	2317	3.65	Good
20	Tidemill Academy	461	1708	3.70	Good
21	Rathfern Primary School	489	1826	3.73	Good
22	Fairlawn Primary School	527	1991	3.78	Good
23	Prendergast Vale College	515	2002	3.89	Good
24	Brindishe Lee Primary School	279	1149	4.12	Average
25	Rangefield Primary School	449	1882	4.19	Average
26	Knights Academy	1495	6378	4.27	Average
27	St Mary's CE Primary	259	1110	4.29	Average
28	Drumbeat Brockley Special School	157	680	4.33	Average
29	All Saints Blackheath Primary	209	912	4.36	Average
30	John Ball J & I Primary	518	2289	4.42	Average
31	St Margaret's Lee C of E	232	1071	4.62	Average
32	Sydenham School	1357	6335	4.67	Average
33	Lucas Vale Primary School	384	1802	4.69	Average

34	Sir Francis Drake Primary	204	1001	4.91	Average
35	Stillness Junior and Infants	635	3218	5.07	Average
36	Brindishe Green Primary	645	3312	5.13	Average
37	St Saviours RC Primary	236	1231	5.22	Average
38	St William of York RC Primary	279	1466	5.25	Average
39	St John The Baptist CE Primary	210	1118	5.32	Average
40	Lee Manor Primary	475	2540	5.35	Average
41	Holbeach Primary	500	2729	5.46	Average
42	St Bartholomews CE Primary	303	1655	5.46	Average
43	St James Hatcham CE Primary	239	1409	5.90	Average
44	Childeric Primary	476	2876	6.04	Poor
45	Holy Cross RC Primary	261	1579	6.05	Poor
46	Launcelot Primary	445	2741	6.16	Poor
47	Kilmorie Primary School & PDC	444	2758	6.21	Poor
48	Perrymount Primary	254	1595	6.28	Poor
49	Elfrida J & I School Primary	415	2633	6.34	Poor
50	Conisborough College	843	5368	6.37	Poor
51	St Michaels Sydenham CE Primary	221	1448	6.55	Poor
52	Myatt Garden Primary	522	3638	6.97	Poor
53	St Augustines RC Primary	241	1694	7.03	Poor
54	Good Shepherd RC Primary	275	2018	7.34	Poor
55	Holy Trinity Sydenham RC Primary	193	1448	7.50	Poor
56	Adamsrill Primary	567	4275	7.54	Poor
57	Kelvin Grove Primary	565	4407	7.80	Poor
58	Addey and Stanhope Secondary	595	5059	8.50	Very Poor
59	Sedgehill College	1375	12068	8.78	Very Poor
60	Grinling Gibbons Primary	306	2699	8.82	Very Poor
61	St Joseph's RC Primary	278	2714	9.76	Very Poor
62	Haseltine Primary	398	3907	9.82	Very Poor
63	Christ Church CE Primary	245	2525	10.31	Very Poor
64		461	4767		•
	Edmund Waller Primary			10.34	Very Poor
65 66	Forster Park Primary	496 704	5269	10.62	Very Poor
66 67	Torridon - Junior and Infants	704	7689	10.92	Very Poor
67	Chelwood Nursery School	132	1526	11.56	Very Poor
68	Brent Knoll Special School	148	2101	14.20	Very Poor
69	Horniman Junior & Infants	231	3646	15.78	Very Poor
70	John Stainer Primary	296	5385	18.19	Very Poor
71	Eliot Bank Primary	551	10763	19.53	Very Poor
72	Prendergast Ladywell Fields College	863	18100	20.97	Very Poor
73	Watergate School	90	1986	22.07	Very Poor
74	Greenvale School	109	3105	28.49	Very Poor
75	New Woodlands Special School	8	495	61.88	Very Poor
76	Clyde Early Childhood Centre	109	No data	-	-
77	Coopers Lane Primary	542	No data	-	-
78	Deptford Green Secondary	955	No data	-	-
79	Gordonbrock Junior and Infants	574	No data	-	-

80	Prendergast Hilly Fields College	862	No data	-	-
81	Secondary St Matthew Academy	1160	No data	-	-
82	Trinity School	537	No data	-	-

¹Thames Water data for 2013/14 comprising of actual and estimated meter readings ²Energy and Water Benchmarks for Maintained Schools in England, Department for Education, 2002

Schools Forum 25th September 2014 Item 3 Appendix 3

Schools with supplies not on the council contract

Adamsrill Primary Addey and Stanhope Secondary Bonus Pastor Secondary Brent Knoll Special School Brindishe Green Primary Brindishe Lee Primary Conisborough College Coopers Lane Primary **Dalmain Primary** Deptford Green Secondary Drumbeat Special School Edmund Waller Primary Elfrida Primary Eliot Bank Primary Holbeach Primary **Horniman Primary** Kelvin Grove Primary Lee Manor Primary Lucas Vale Primary Myatt Garden Primary New Woodlands Special School Prendergast Vale College Sedgehill College St. Bartholomews Primary St. James Hatcham Primary St. Michaels Sydenham Primary

Stillness Junior and Infants Sydenham Secondary Trinity Secondary

Watergate Special School

Schools Forum Energy Efficiency report 2013/14 Follow up activity

	Support	Tick ☑	Name of School	Name of contact at school
1.	Sharing of existing good practice in Lewisham schools			
2.	Energy audits			
3.	Advice on up front funding for energy efficiency works including SALIX loan			
4.	Advice on procurement options including the RE:FIT framework			
5.	Advice on renewables			
6.	Training for premises officers			
7.	School energy assembly			
8.	Development of pupil engagement project			
9.	Follow up discussion on water consumption			

Completed by:	
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Date: