Committee(s):	Date(s):
Strategy and Performance Summit Group Finance –Efficiency and Performance Sub	23rd June 2014 2nd July 2014
Subject: CARBON DESCENT PLAN 2009 – **Year 5 - End Year Energy Target Review 2013/2014 (CS/233/14)**	**Public**
Report of: The City Surveyor	**For Decision**
Ward (if appropriate): N/A	

SUMMARY

This report summarises progress against the energy reduction targets set out in the Carbon Descent Plan 2009. This report covers the period April 2013 - March 2014.

The data contained in this report indicates that the City is ahead of its target to reduce energy usage at 31st March 2014.

Energy usage in 2013/14 decreased by 8% compared with the previous 12 months (2012/13). The energy consumption for 2013/14 is 16% below the base year 2008/09.

The City's total energy expenditure for 2013/14 was £15.1m, compared with £14.4m for 2012/13

A recent independent report undertaken on behalf of the City indicated that the City can expect energy cost rises between 30 and 40% by 2017/18.

Rising energy costs remain a significant financial risk, in particular given the volatile nature of wholesale energy prices.

RECOMMENDATION

I RECOMMEND:

- A new overall revised energy reduction target of 10% be adopted for the period 2014/15 – 2017/18
- For future reporting energy usage should be adjusted each year for weather;
- Energy usage for the wholesale Markets should be reported for landlord controlled areas only and should exclude energy usage that is solely tenant controlled;
- The Energy Manager should be tasked with revising targets (annually) for individual Chief Officers based on their savings potential.

Main Report

Background

1. The City's current energy bill (excluding vehicle fuel and water) is £15.1M. Two recent independent studies commissioned by the City of London forecast retail energy price rises of between 30 - 40% over the next 5 years.

2. To forestall anticipated price rises, in June 2009 Chief Officers agreed to adopt an energy reduction target of 15% (CDP-09) by 2015.

Current Position (Review of 2013/14 Energy Usage).

3. Energy consumption has decreased by 8% over the previous year. Overall energy usage has declined 16% below the base year 2008/09. This indicates the City is ahead of its energy reduction target (see table 1 and figure 1).
4.

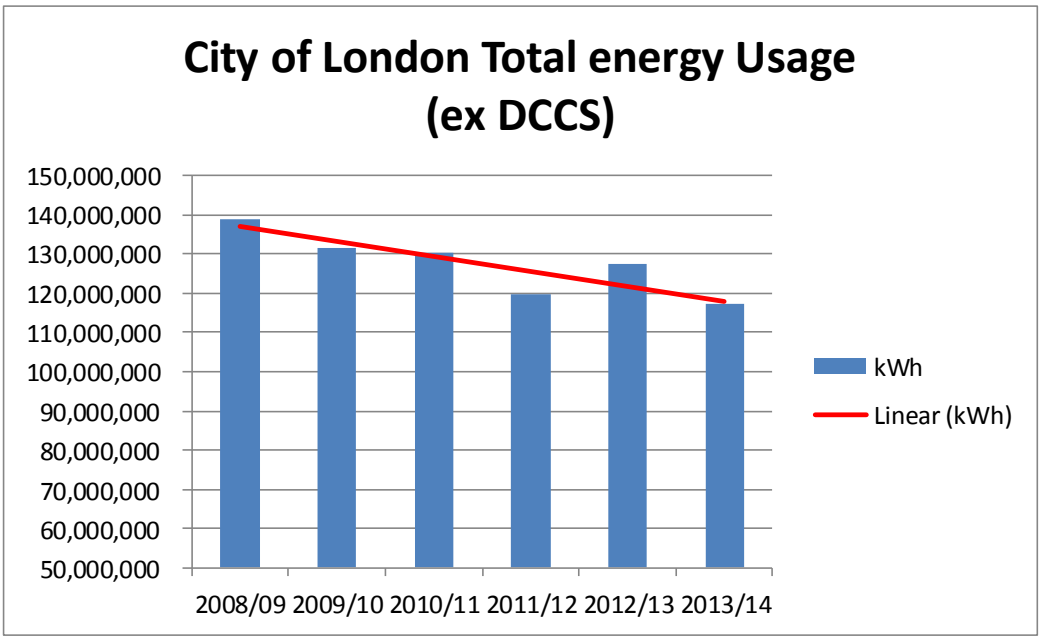

Figure 1 - City of London total energy usage 2008/09 (base year) – 2013/14

5. The cumulative value of the last four years energy savings is estimated at £5.5M based on an averaged unit energy price. Despite these savings the City's energy expenditure continues to increase (see figure 3).

6. A summary table of overall and departmental energy consumption for the year 2013/14 compared with the previous year and the base year is shown in figure 1 and table 1 (and in detail in Appendix A).

7. Comments by individual departments on their energy performance are contained in Appendix B.

	%age Difference 2012/13 v 2013/14	%age Difference Base Year v 2013/14
CITY of LONDON TOTAL (exc DCCS)	**-8**	**-16**
DEPARTMENT		
Built Environment	-24	-37
City of London Police	-2	-26
City of London School for Girls	-9	-25
Guildhall School Music & Drama	-13	-22
Culture Heritage & Libraries	-2	-20
City of London Freemen's School	-19	-18
Guildhall Complex	-7	-17
Open Spaces	-5	-15
Central Criminal Court	-7	-14
Barbican Centre	-12	-11
City of London School (Boys)	-15	-9
Mansion House	-11	-7
Markets & Consumer Protection (inclusive of tenant energy usage)	0	-6

Table 1- Summary Percentage Change in Energy Usage overall and by Department against Base year (2008/09) and previous year (2012/13).

Weather Correction

8. The start of 2013 was considerably cooler than average which necessitated most heating systems to still be operational well into the Spring period. The 2013/14 winter period (October to March) however was 25% warmer than the same period in 2012/13, which would lead to a reduction in energy usage for winter heating. This can be seen clearly in figure 2 which matches actually energy usage with weather, measured in Degreeday data[1].

9. Over the short term, fluctuations in energy usage due to variations in the weather may give a distorted view of the City's energy performance. This can be compounded by increased energy usage associated with special events, such as the Olympics and Queens Diamond Jubilee in 2012/13. This was recognised and highlighted in the recent Strategic Energy Review with the recommendation that energy usage be adjusted for prevailing weather in future energy targets and reporting strategies.

[1]Heating degreedays are a measure of average daily temperature compared against a base temperature for a particular region. The City uses Thames Valley region and a base of 15.5^0C. For example, if yesterday's average daily temperature was 5.5^0C, then the degreedays for yesterday would be 10. If the average daily temperature for a Winter month (30 days) was 5.5^oC then the degreedays would be 10 x 30 = 300.

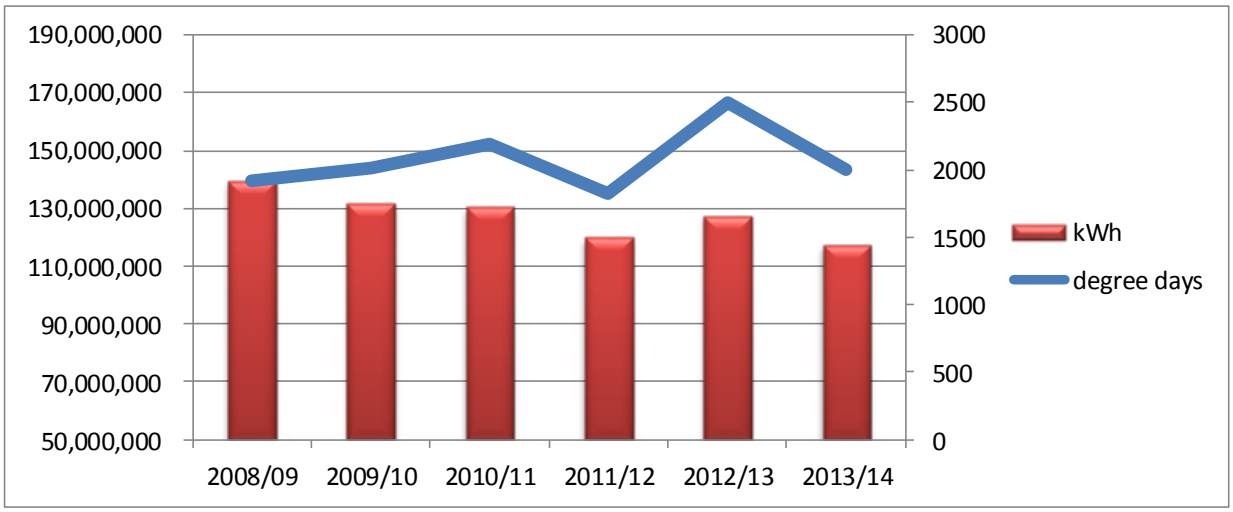

Figure 2 – City of London total energy usage 2008/09 (base year) – 2013/14 comparison with Degreeday data for Thames Valley 2008/09 – 2013/14.

City of London Energy and Water Charges

10. Figure 3 below shows the City of London's total energy and water costs reported from CBIS since 2000/01 to date, together with a linear projection to 2018. These figures do include tenant energy usage which is recoverable. The trend-line indicates a growth in energy costs to £19.8M by 2018.

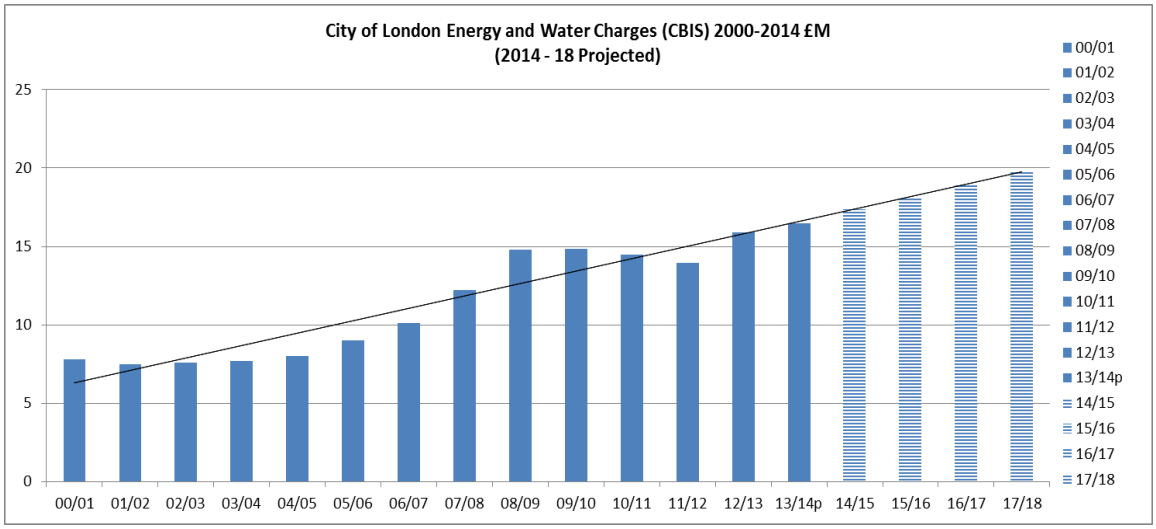

Figure 3 - CoL Energy and Water Charges (excluding HRA water rates) 2008/09 (base year) – 2013/14 with projected energy costs to 2018 extrapolated from trend 2000 – 2014.

11. Two independent external studies undertaken on behalf of the City of London indicate that the City can anticipate energy cost increases of between 30% and 40% over the coming years, due to the price rises arising from mandated energy infrastructure charges.

12. The volatility of wholesale energy prices (see figure 4) could drive this even higher and so energy costs remain a significant and uncertain financial risk.

13. The City's Energy Team works closely with City Procurement to ensure a strategic approach to energy procurement. Collaborative purchasing, through expert buying agencies and where possible through flexible purchasing arrangements provides the greatest value for energy procurement.

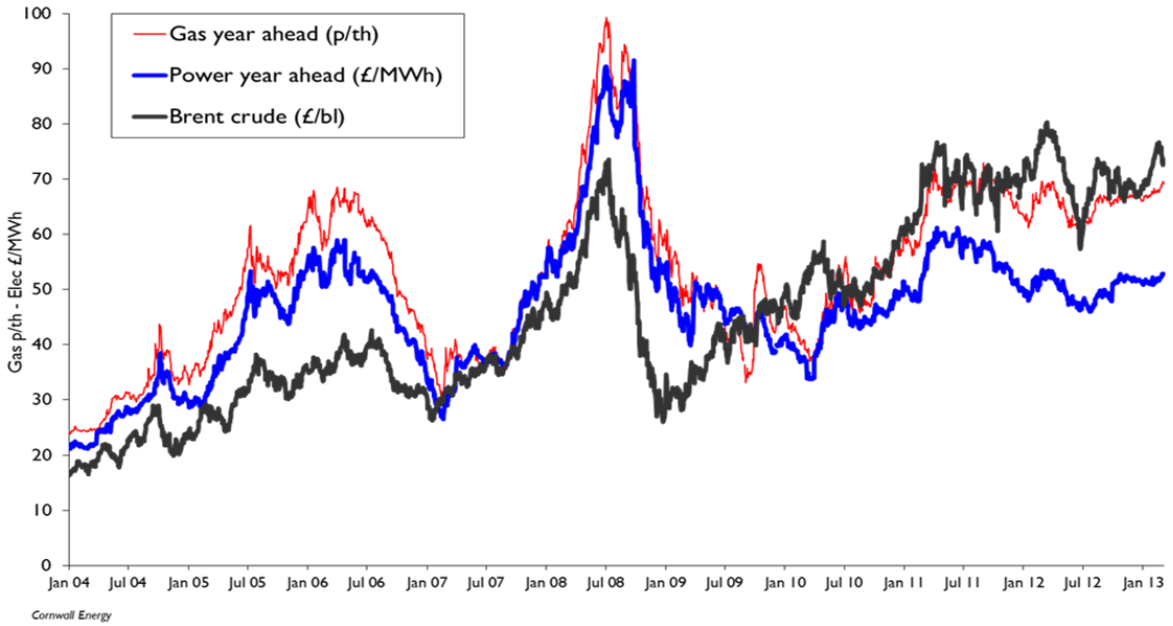

Figure 4 – UK wholesale energy prices 2004 – 2013.

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14. It was recognised a number of years ago that progress on energy reduction will become less easy as the 'no cost' and 'low cost' measures are taken up.

15. To this end, the existing approach of 'site by site' prioritised reductions was not considered appropriate to bring large scale financial benefit. To address this issue over the summer of 2013 the City of London commissioned external consultants to undertake a fundamental review of energy use across the operational estate with a view to identifying actions which could offset the increased risk of rising energy prices.

16. Following an initial desktop review site visits were carried out to eight of the highest energy using buildings in the estate. The focus of the study was on the Corporation's operational buildings, and excluded the residential estate and investment portfolios.

17. As well as considering the different technical opportunities available for energy reduction, their capital investment requirements and cost/benefit performance, the review also considered a range of non-technical issues including:

- Financing options and mechanisms for implementing the energy reduction measures
- Space planning and property rationalisation
- Changes to operational procedures (e.g. in relation to repairs and maintenance, security, cleaning, out-of-hours working, etc.)
- Behavioural issues

18. The full findings of the review illustrating how the Corporation can reduce its energy use by 40% by 2025 against the original 2008/09 baseline were presented to Summit Group in November 2013.

19. The report recommended prioritising buildings, revising targets; and stripping out direct tenant energy usage from future reporting figures (in particular Markets). A priority list of technologies was been identified and changes to the Building Repairs and Maintenance contract were suggested that will incentivise Mitie. Mitie have already commenced site energy surveys which City Surveyors Department are reviewing. The Strategic Energy Review also recommended toestablish an energy conservation fund to provide capital funding for energy savings schemes outside of traditional building repair, maintenance and project budgets and work is progressing to establish this funding mechanism. Any proposals for progressing any actions which would involve expenditure on physical intervention would be progressed, as appropriate, in accordance with the City's project control procedures and subject to available funding.

20. The report recommended continuing the work of the Carbon Energy Reduction Group (CERG) and the role of senior representatives for each department (Energy Co-ordinators) and working in collaboration with technical professionals in City Surveyors department continue to develop individual Departmental Energy Action Plans. Other actions which could help the City of London Corporation achieve their long term energy reduction aims include:
    - Appropriate use of technology;
    - Property and building prioritisation;
    - Space planning and location and building optimisation;
    - Optimisation of the Building Management System;
    - Onsite energy generation and distribution (including renewables);
    - Server room utilisation and cooling (including virtualisation);
    - Financing options and mechanisms for implementing the energy reduction measures
    - Changes to operational procedures (e.g. in relation to repairs and maintenance, security, cleaning, out-of-hours working, etc)
    - Behavioural issues

21. In January 2014 Summit Group expressed their support for these actions and activities. The Deputy Town Clerk was tasked with leading a working group who would explore them further and initiate action on their delivery.

Corporate and Strategic Implications

22. The Carbon Descent Plan - 09 is the first phase of the delivery mechanism to achieve the climate change mitigation strategy targets contained within the City's Climate Change Mitigation Strategy (CCMS). The CCMS set CO_2 emission reduction targets, in line with those adopted by the UK Government - 15% by 2015 and 34% by 2020 and 80% by 2050.

23. The CDP-09's focus is the reduction of energy resources which in turn will lead to offset savings in energy costs. The CDP- 09 is therefore in accord with the second objectives of the City's Corporate Plan strategic aims:
    - *To provide . . . **efficient** and high quality local service . . . with a view to delivering **sustainable** outcomes'; and*

24. The Corporate Property Asset Management Strategy 2012/2016 was approved by the Corporate Asset Sub Committee in December 2012. The Asset Management Vision is to manage the City's operational assets effectively, efficiently and sustainably to deliver strategic priorities and service needs. The key objectives identified within the Strategy endorses that the City overall, in accordance with the CDP-09 achieves a 15% energy reduction by 2015. Reducing energy usage and carbon emissions allies with the City's core value:
    - *The right services at the right price.*

25. In addition its primary focus is in keeping with KPP2 of the Corporate Plan
    - *Maintaining the quality of our public services whilst reducing our expenditure and improving our efficiency;*

26. The City's Climate Change Mitigation Strategy has set stringent CO_2 emission reduction targets, in line with those adopted by the UK Government- 15% by 2015 and 34% by 2020 and 80% by 2050. Investment to save energy will not only deliver financial savings but also associated carbon emission savings, at a time when for the first time this year large businesses will begin to pay for carbon emissions separately.

Conclusion

27. The report's purpose is to summarise energy reduction achievements at the end of the fifth year of the City's CDP-09 and progress against the energy overall reduction targets to achieve a 15% energy reduction by 2015. Whilst the cold start to the year made early progress slow, the warmer winter of 2013/14 has meant the City has achieved its target a year ahead of schedule. The energy

usage compared against the baseline has an estimated savings value of £5.5m based on an averaged energy usage cost.

28. This report highlights that significant in-roads have been made at reducing the City's absolute energy usage. At a local level significant reductions have already been made in reducing energy demand and overall the City has achieved its Phase 1 reduction target. However there still remains a significant and uncertain risk for future energy costs on both the regulated side and wholesale costs of energy

FOR INFORMATION

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APPENDIX A: Carbon Descent Plan -09: Performance by Department to Date

Department/Site	2008/09 (kWh)	2009/10 (kWh)	2010/11 (kWh)	2011/12 (kWh)	2012/13 (kWh)	2013/14 (kWh)	Percentage Difference 2013/14 v 2012/13	Percentage Difference 2013/14 v 2008/09 (base-year)
BARBICAN CENTRE	19,153,157	18,575,736	17,644,726	16,712,436	19,213,438	**16,969,935**	**-12%**	**-11%**
GSMD	4,449,163	4,806,371	4,163,796	3,623,058	4,021,153	**3,488,643**	**-13%**	**-22%**
MANSION HOUSE	2,571,776	2,684,672	2,483,691	2,255,934	2,664,627	**2,384,358**	**-11%**	**-7%**
London Central Market	20,155,857	19,043,817	18,042,330	17,579,322	17,845,523	**17,893,851**	**0%**	**-11%**
Billingsgate Market	3,644,407	3,519,145	3,552,927	3,444,592	3,833,438	**4,024,504**	**5%**	**10%**
Spitalfield's Market	7,096,615	7,038,575	7,023,814	7,120,156	7,175,289	**7,259,704**	**1%**	**2%**
TOTAL ALL MARKETS & Consumer Protection. (including above)	32,150,923	30,813,138	29,875,920	29,253,484	30,143,550	**30,223,295**	**0%**	**-6%**
GUILDHALL	25,607,333	24,461,781	23,739,155	21,792,796	22,919,462	**21,256,936**	**-7%**	**-17%**
CENTRAL CRIMINAL COURT	8,846,237	8,835,114	9,114,099	8,140,338	8,139,755	**7,581,024**	**-7%**	**-14%**
CoL BOYS School	3,600,089	3,587,435	3,777,043	3,546,578	3,839,510	**3,282,156**	**-15%**	**-9%**
CoL GIRLS School	2,467,791	2,179,527	1,995,850	1,915,678	2,046,937	**1,862,004**	**-9%**	**-25%**
CoL FREEMEN'S School	5,597,955	3,133,465	5,517,594	5,112,908	5,690,841	**4,597,229**	**-19%**	**-18%**
CULTURE, HERITAGE & LIBRARIES	4,858,372	4,437,616	4,266,467	3,430,722	3,950,749	**3,871,429**	**-2%**	**-20%**
CITY POLICE	10,403,655	8,468,530	8,588,491	7,781,427	7,926,283	**7,743,270**	**-2%**	**-26%**
BUILT ENVIRONMENT	12,813,811	12,943,941	12,689,088	10,828,698	10,645,831	**8,083,099**	**-24%**	**-37%**
OPEN SPACES	6,846,595	6,814,096	6,385,921	5,517,916	6,141,873	**5,842,322**	**-5%**	**-15%**
CSD Heritage Sites TOTAL	15,538	19,031	32,463	12,991	17,417	**15,726**	**-10%**	**1%**
TOTAL Exc DCCS	139,382,395	131,760,453	130,274,304	119,924,964	127,361,426	117,201,426	**-8%**	**-16%**

APPENDIX B - Departmental Energy Usage (Comments provided by Departments on their energy usage for 2013/14

The Central Criminal Court

The Central Criminal court concurs with the figures contained in this report. It should be noted that as the CCC refurbishment gathers momentum and plant change get under way significantly in future years our energy consumption will rise for several years as dual systems will be run until we can start to shut down completely the redundant systems. This will affect Electrical Operating Power but more so with gas use climbing and oil use cutting back until the change-over is complete hopefully 10 years from now.

Culture, Heritage and Libraries

Significant reductions in energy use in previous years has resulted in little opportunity to reduce further without effectively closing services to the public. LED replacement projects are being considered to reduce energy usage by more efficient lighting. The overall number of CHL sites has increased during 2013/14 due to the addition of Artizan Street Library and Community Centre.

Open Spaces

Open Spaces has recorded a decrease in annual energy consumption. In part this reflects reduced energy consumed during the milder winter. The department is continuing to use its Sustainability Audit System to drive reductions in energy consumption at sites. These audits also look at water usage. Audits of energy conservation measures currently in use in the department are being concluded, and new action plans for each division are being developed to deliver our target savings. At Epping Forest efforts focused on ensuring accurate meter readings, monitoring usages for anomalies and trends. Solar panel at the View visitor centre have reduced consumption of main electricity. Work has also been done across operational buildings to install LED lighting.

Barbican & Guildhall School for Music & Drama (The Campus),

The 'Campus' base line energy consumption was increased in 2013/14 (compared with 2012/13), with the addition of Cinema 2 & 3, Cinema Café & 'Cotes' restaurant to the operational portfolio. These increases were partially offset with the employment of a dedicated, specialist 'Sustainable Engineer', who is undertaking a rolling, bespoke optimisation of the Building Energy Management Systems (BEMS). This combined with the installation of another Voltage Optimisation unit, replacement of a further 1500 high efficiency LED, behaviour change drivers, continues to reduce the energy consumption on what is already high efficiency building stock.

City of London Girl's School

The school is very pleased to have achieved a 25% reduction in energy compared to the target reduction of 13.4% for the period. Use of the school continues to increase

both during the holiday periods and in the evenings and despite colder weather compared to 2008/2009 the reduction in energy usage is encouraging and indicates that local energy reduction measures are continuing to work.

City of London School (Boys)
The City of London School has continued to work to reduce consumption both in terms of infrastructure and in terms of changing behaviours. This academic year has seen the widespread introduction of LED lighting as well as centralised controls of computer on and off times. We have also rolled out quicker "snooze times" for printers, copiers and computers. Moreover, the centrally-controlled air-conditioning units have not been switched on as early in the summer as in previous years. The fruits of our labours are beginning to show, for example our electricity bill alone is down by £20,000 compared to the previous twelve months. It is the electricity bill, of course, which is less prone to influence by the weather. On the gas side, we have installed a new cover to the swimming pool, which is greatly reducing heat loss. As regards behaviour change, there has been an ongoing poster campaign by pupils. The Energy Management Committee, which consists of both pupils and adults continues to meet to develop strategy. There have been articles in the School newspaper and the School played host to the last meeting of both the Energy Wardens and the Energy Co-ordinators from across the City of London Corporation

The City of London Freemen's School
The mild winter has played its part in the energy savings for the School. Phase 1 of the schools Master Plan included plans for an energy saving ground source heat pump but the anticipated benefits of this new technology have not yet been realised. Due to the requirement for decanting, the proposed demolition of the old Boys Boarding House will be delayed until 2020. The Main House refurbishment plans are being scrutinised at present and further details of the replacement for the very old systems currently in use will be reported in a future energy report. The School are researching recycling opportunities to become a "100% no waste to Landfill" site.

Mansion House
The MH continues to strive in its reduction of energy overall. By educating and informing the users and staff and making all parties aware of the energy consumption issue. With the building becoming busier throughout the year, it endeavours with the restrictions of a Grade 1 listed building to meet the requirements set by the City of London. In the last year the House has undertaken where possible to install LED lighting, review the building management system and how it can best be used efficiently.

City of London Police The combined energy usage would indicate a modest decrease in energy usage this last year. Energy consumption and usage is obviously a key indicator and the COLP will want to continue to improve upon these figures in the future. However this is somewhat unrealistic at present due to the nature of the

buildings and the overall age of the plant. The present Police estate is in poor condition, and this has been recognised by the decision to invest in a new police campus over the next few years which significantly reduce its carbon footprint.

The Department of Built Environment

The Department surpassed the 15% reduction target in 2012/2013 and continues to identify further savings through its Department energy action plan implementing in 2013/14 energy/carbon savings by replacing the existing lighting in public conveniences, some River Bridges, and service subways, with latest high efficient LED lighting . Further, for 2014/15, it is intended to continue with a review of off street car park lighting, and the implementation of the first phase of replacing City street lighting as identified in the corporate plan.

The (City Surveyor) Guildhall Complex and **Walbrook Wharf**

The initiatives that have been adopted at the Guildhall Complex since the base year of 2008/09 have been mainly funded by Local risk and general operational building control. Further options are being explored, so the reduction in energy consumption is sustained and where possible improved. The development to place the East Wing on the Citigen District Heating System is an example of this. Further projects are being developed to focus on the sites lighting and Building Management Systems operation and configuration. Walbrook Wharf are also continuing to put in place initiatives to improve their energy efficiency with the next phase of the office lighting project being an example of this.

Markets & Consumer Protection

The most significant energy users within Market & Consumer Protection are the wholesale food markets. Although total energy usage on Market sites shows a reduction of 6% compared to the base year, this includes tenants' usage over which we have no control. This in turn masks the effectiveness of local initiatives to reduce the energy usage that is under the control of CoL (i.e. the common parts). Each market has shown a considerable reduction in CoL energy usage compared to the base year (Billingsgate 34%; New Spitalfields 27%; Smithfield 20%) while tenant usage has shown a steady upward trend over the same period. CoL energy usage for 2013/14 shows a reduction of 7% across all three markets compared to 2012/13 (Billingsgate 16%; New Spitalfields 7%; Smithfield 4%).