

Committee:	Dated:25th October 2019
Corporate Asset Sub-Committee (CASC)	November 7 th 2019
Subject: 2019/20 Quarter 2 Energy Performance Report	Public
Report of: The City Surveyor	For Information
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SUMMARY

This report presents the 2019/20 Quarter 2 Energy Performance Report with results and commentary for the year-on-year and long-term performance for CoL operational sites.

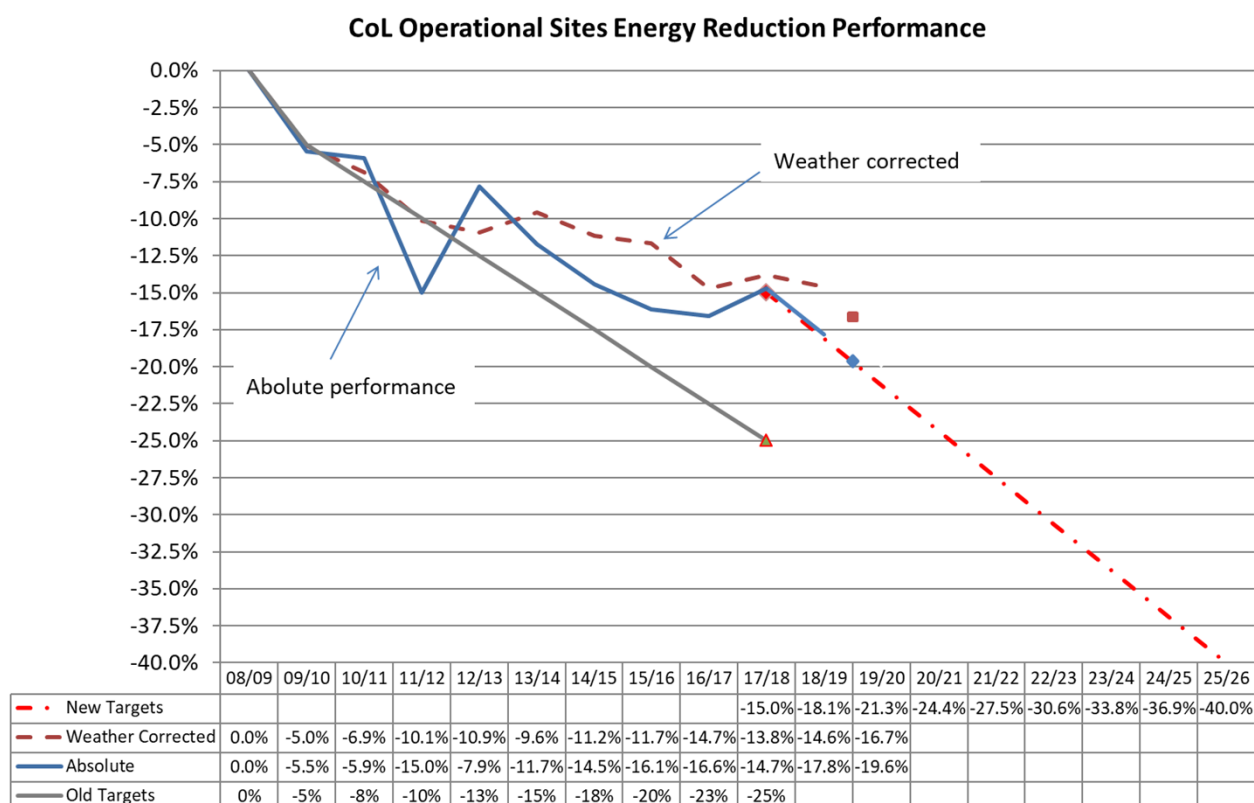
The weather corrected energy consumption decreased 2.5% by Q2 of 2019/20 compared to 2018/19. Smithfields Market was the main contributor to the energy reduction, supported by reductions at Guildhall Complex, Central Criminal Court, and Milton Court.

The annual performance up to Q2 2019/20 indicates a 19.6% reduction in absolute energy consumption, translating to a 16.7% reduction when corrected for the weather against the 2008/09 baseline. Q1&Q2 results indicate the city is to achieve the annual reduction target.

MAIN REPORT

Performance update

Chart 1. Overall performance change from the 2008/09 base year



1.1 Long-term: chart 1 presents an update on the long-term performance against target, including the interim performance up to Q2 19/20 (dotted lines). Compared to the 2008/09 baseline the performance up to Q2 2019/20 indicates a 19.6% reduction in absolute energy consumption, translating to a 16.7% reduction when corrected for the weather. This represents good progress towards achieving the 2019/20 end of year targets to be on course for a 40% reduction by 2025/26. It should be noted that 21 New Street has been added to the portfolio recently, adding ~1.5% to the total portfolio energy consumption. This additional energy could however be reversed in absolute terms when other properties occupied by CoL Police are disposed of in the coming years.

Table 2. Performance comparison by top 30 sites: 2019/20 Q2 with 2018/19

Site Name	Weather corrected				Q2 19/20 to Q2 18/19	
	12-months to Mar-19	12-months to Sep-19	Diff. kWh	Diff. %	kWh Diff.	% Diff
London Central Market (Smithfield - landlord & tenant)	18,245,115	16,495,241	-1,749,875	-9.6%	-1,012,747	-22.3%
Guildhall Complex	17,366,450	17,078,922	-287,528	-1.7%	-66,505	-2.0%
Barbican Arts Centre	17,152,399	17,565,414	413,016	2.4%	554,004	13.6%
Central Criminal Court	8,090,943	7,364,119	-726,824	-9.0%	-434,620	-24.7%
New Spitalfields Market (landlord)	6,800,091	6,799,483	-608	0.0%	-52,964	-2.6%
City of London Freemen's School	4,906,326	4,777,685	-128,641	-2.6%	-70,168	-11.5%
GSMD - Milton Court	3,879,176	3,454,604	-424,572	10.9%	-224,019	-28.5%
Streetlighting	3,628,433	3,773,371	144,938	4.0%	103,565	14.1%
Billingsgate Market (landlord & tenant)	3,575,265	3,519,202	-56,063	-1.6%	-24,908	-3.2%
Bishopsgate Police Station	3,403,005	3,315,132	-87,873	-2.6%	-84,528	-14.6%
City of London School	3,023,669	3,169,263	145,594	4.8%	104,211	29.7%
City of London Crematorium	2,812,736	2,874,254	61,517	2.2%	74,563	16.1%
Tower Bridge	2,326,102	2,524,245	198,142	8.5%	160,544	76.4%
GSMD – Silk St.	2,311,250	2,295,455	-15,795	-0.7%	-51,798	-11.3%
Mansion House	2,306,203	2,203,800	-102,404	-4.4%	-44,020	-16.6%
City of London School for Girls	2,250,196	2,271,831	21,636	1.0%	30,779	10.0%
New Street (21)	1,779,571	1,754,534	-25,037	-1.4%	-9,985	-3.1%
GSMD - Sundial Court	1,777,505	1,842,470	64,964	3.7%	-43,187	-16.1%
Walbrook Wharf	1,725,223	1,567,306	-157,917	-9.2%	-69,764	-19.4%
Wood Street Police Station	1,600,081	1,527,385	-72,696	-4.5%	-38,588	-9.3%
London Metropolitan Archives	1,345,486	1,290,202	-55,284	-4.1%	-47,228	-23.0%
Snowhill Police Station	863,679	823,817	-39,863	-4.6%	-40,221	-25.5%
Animal Reception Centre	764,249	746,946	-17,303	-2.3%	-2,932	-2.4%
Open Spaces Hampstead Heath Leisure	660,653	678,525	17,872	2.7%	9,790	6.6%
Open Spaces Epping Forest	648,255	641,819	-6,435	-1.0%	-238	-0.3%
Tower Hill Coach & Car Park	542,795	547,524	4,729	0.9%	-1,892	-1.4%
Open Spaces Golders Hill & Extension	371,809	380,289	8,480	2.3%	4,336	14.7%
Upper Thames Street Tunnel Lighting	304,116	264,449	-39,667	13.0%	-16,524	-22.6%
Open Spaces Parliament Hill	258,042	272,518	14,476	5.6%	8,451	49.1%
Minorities Car Park	246,730	246,730	0	0.0%	0	0.0%
Total	114,965,556	112,066,535	-2,899,021	-2.5%	-1,286,593	-5.4%

1.2 Last quarter: table 2 presents the performance of the 30 largest energy consuming sites. The actual (absolute) difference in energy consumption for Apr-Sep 2019/20 compared to Apr-Sep 2018/19 is presented as well as the weather corrected trend for the 12-months of energy consumption over the periods up to the previous and latest quarter. Comparing the absolute performance provides an indication of recent performance changes but is influenced by the

weather which over Q2 19/20 was milder than Q2 18/19 with less significant periods of higher and lower temperatures. The 12-month weather corrected results provides an indication of the latest annual performance when excluding the differences in the weather.

Smithfields Market was the main contributor to the overall energy reduction, supported by reductions at Guildhall Complex, Central Criminal Court, and Milton Court. Commentary focused on the key sites and contributors to performance change is provided below with further commentary provided on others in Appendix 1.

1.3 LCM (Smithfield): overall actual energy reduced by ~22% in Q2 compared to Q2 for the previous year, and the main changes were:

- -540MWh (-59%) decrease in cooling for the East and West Markets, partly a result of the reduced demand for cooling due to the comparatively colder weather but mostly due to improved BEMS strategies.
- -310MWh (-11%) electricity for East and West Markets due to improved BEMS strategies for Car Park ventilation and ventilation and circulation pumps.
- -145MWh (-55%) reduction heat for West Market due to improved BEMS strategies.

The Energy Team continue deliver BEMS improvements and are seeking funding towards LED lighting for the car park.

1.4 Guildhall Complex (GHC): overall actual energy consumption reduced by ~2% in Q2 compared to Q2 the previous year. Correcting for the weather shows consumption has reduced by ~1.7% up to Q2 19/20. The main changes and reasons are:

- +82MWh (+23%) increase in actual heat consumption across the site, apart from the East Wing, but when corrected for the colder weather performance remained unchanged.
- +16MWh (+6%) increase in East Wing public areas electricity.
- -25MWh (-8%) reduction in OJR electricity, due to lower demand from computer equipment.
- -25MWh (-7%) reduction in electric chillers serving West and East Wings mainly due to the comparatively colder weather this summer compared to summer 2018.
- -115MWh (-16%) reduction in North Wing, Great Hall, and Old Library electricity due to BEMS improvements by the Energy Team and LED lighting installation in the Great Hall.

The Energy Team are in progress with delivering many more BEMS control improvements and are also looking to secure funding towards ventilation motor controls, funding for additional sub-metering and supporting improved site-wide solutions for cooling and humidification. Consumption levels are particularly high in the East Wing due to a mixture of plant maintenance and lighting control issues which the Energy Team are investigating with FM.

1.5 Barbican Arts Centre (BAC): overall energy consumption increased by 14% over Q2 19/20 when compared directly with Q2 18/19. Correcting for the weather shows consumption has increased by ~2.4% up to Q2 19/20. The main changes over Q2 19/20 compared to Q2 18/19:

- Increased demand on services due to increased site events and activity:
 - +286MWh (+20%) increase in cooling.
 - +228MWh (+37%) increase in heating.
 - +14MWh (+24%) increase in catering electricity.
 - +14MWh (+29%) increase in theatre electricity.
- -47MWh (-100%) decrease in Exhibition Halls heating due to a supply maintenance issue.

The Energy Team are working up a proposal for LED lighting within the car park driveways and will be providing the site with support for BEMS control improvements.

1.6 Central Criminal Court (CCC): overall energy consumption decreased -434MWh (-25%) over Q2 19/20 when compared directly with Q2 18/19. Correcting for the weather shows consumption has decreased -9% up to Q2 19/20. The main reduction was in relation to the old oil heating boilers, whose actual consumption decreased by -207MWh (-35%) in Q2 19/20 compared to the same period the previous year. This was due to the site reinstating a smaller oil boiler to improve load matching and reduce system losses following advice from the Energy Team. Gas consumption for the new gas boiler also decreased by -174MWh (-43%), -7% when corrected for the weather and this was mainly due to consumption having previously been based on estimated readings. As the phased refurbishment continues, energy should reduce, but significant reductions will only come once older heating and cooling plant is decommissioned at the end of the programme. The Energy Team are also pursuing funding for LED lighting upgrades.

1.7 GSMD Milton Ct. overall energy consumption decreased -224MWh (-29%) over Q2 19/20 when compared directly with Q2 18/19. Correcting for the weather shows consumption has decreased by 11% up to Q2 19/20. The main reason for this was a -430MWh (-74%) decrease in cooling in Q2 19/20. This is likely due to a combination of ventilation control improvements undertaken by FM and supply issues from Citigen. Heating consumption decreased -4MWh (-6%) but was unchanged when corrected for the weather. Electricity consumption decreased -32MWh (-6%). The Energy Team are looking to secure funding to upgrade the lighting in some areas and support FM with further control improvements.

1.8 Tower Bridge: overall energy consumption increased +161MWh (+29%) over Q2 19/20 when compared directly with Q2 18/19. Correcting for the weather shows consumption has increased ~9% up to Q2 19/20. The main reason for this change was an increase of +147MWh in gas consumption for the new heating boilers due to their higher capacity and displacement of previous electric heating. Electricity consumption also increased +13MWh. The Energy Team and FM will review the control settings to ensure efficient operation is being achieved.

1.9 CoL Boys: overall energy consumption increased +104MWh (+30%) over Q2 19/20 when compared directly with Q2 18/19. Correcting for the weather shows consumption has increased ~5% up to Q2 19/20. This is partly attributed to the fact the gas boilers were out of commission during summer 2018 when they were being replaced and hence the comparative increase in summer 2019. There continues to be a very high electricity demand even during unoccupied hours. This should be investigated by the site to ensure appliances, lighting and plant are not left operating unnecessarily. The Energy Team are looking to secure funding towards LED lighting and ventilation motor controls.

Conclusion

While the long-term energy performance remains below target the results for Q2 are a significant improvement. This indicates that, if sustained, the end of year target should be met and continuation on this trajectory will achieve the 40% reduction target by 2025/26.

Recommendation

Members are asked to note the contents of this report.

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