

Committee:	Dated:29/01/2020
Corporate Asset Sub-Committee (CASC)	
Subject: 2019/20 Quarter 3 Energy Performance Report	Public
Report of: The City Surveyor	For Information
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SUMMARY

This report presents the 2019/20 Quarter 3 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 3.8% by Q3 of 2019/20 compared to Financial year 2018/19. Smithfields Market was the main contributor to the energy reduction, supported by reductions at Central Criminal Court, Milton Court and Guildhall Complex. This was partly offset by significant increases from Barbican Arts Centre, Billingsgate Market and Tower Bridge.

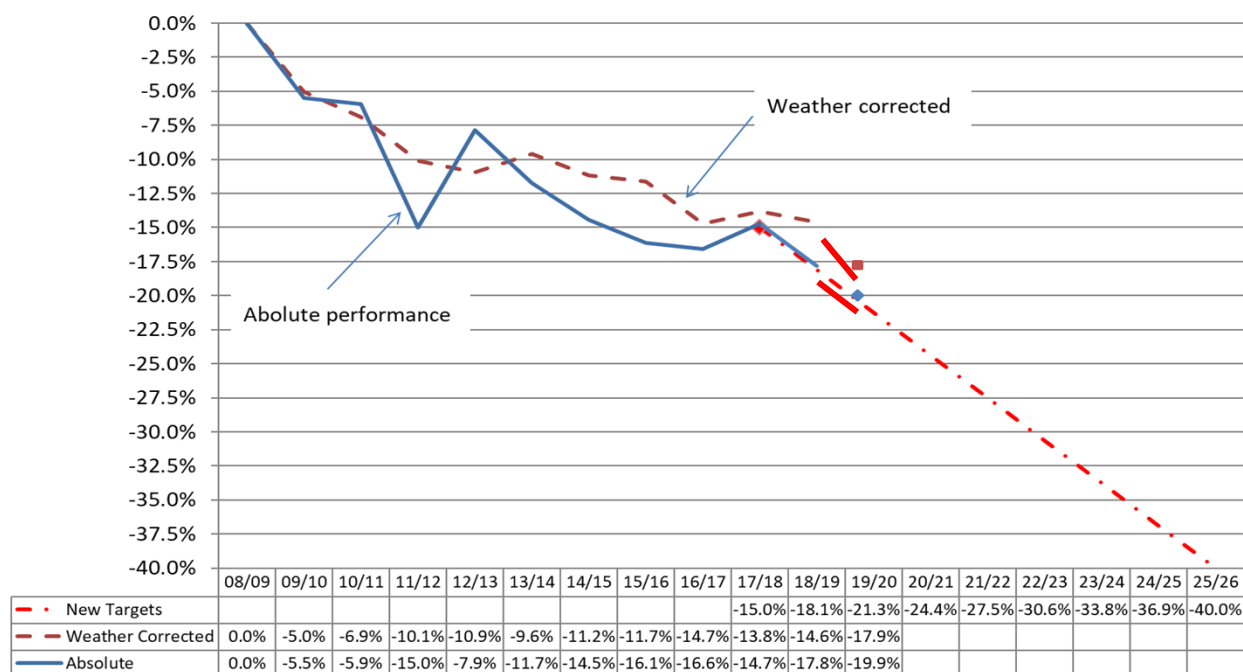
The annual performance up to Q3 2019/20 indicates a 19.9% reduction in absolute energy consumption, translating to a 17.9% reduction when corrected for the weather against the 2008/09 baseline. The Q3 result indicates the annual reduction target is on course to be achieved. An update on energy projects is also included. Sustained progress will require further resource investment within the energy team to return to full strength.

MAIN REPORT

Performance update

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

CoL Operational Sites Energy Reduction Performance



1.1 Long-term: chart 1 presents an update on the long-term performance against target, including the interim performance up to Q3 19/20. Compared to the 2008/09 baseline the performance up to Q3 2019/20 indicates a 19.9% reduction in absolute energy consumption, translating to a 17.9% 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.

Table 2. Performance comparison by top 30 sites: 2019/20 Q3 with 2018/19

Site Name	Weather corrected rolling 12-month comparison: 12 months to Dec-19 compared to 12 months to Mar-19				Absolute single quarter comparison: Oct-Dec 19/20 to Oct-Dec 18/19	
	Mar-19'	Dec-19'	Diff. kWh	Diff. %	kWh Diff.	% Diff
Smithfield Mkt (LL & tenant)	18,247,343	15,184,971	-3,062,373	-16.8%	-1,195,794	-25.6%
Guildhall Complex	17,368,521	17,092,878	-275,643	-1.6%	35,484	0.8%
Barbican Arts Centre	17,152,399	18,229,817	1,077,419	6.3%	725,821	15.5%
Central Criminal Court	8,014,103	7,405,922	-608,181	-7.6%	-196,695	-9.5%
New Spitalfields Mkt (landlord)	6,800,091	6,697,487	-102,604	-1.5%	-77,917	-4.5%
CoL Freeman's School	4,988,624	4,761,624	-227,001	-4.6%	17,438	1.2%
GSMD - Milton Court	3,880,709	3,284,365	-596,344	-15.4%	-120,977	-13.0%
Billingsgate Mkt (LL & tenant)	3,579,295	3,823,144	243,849	6.8%	124,022	14.0%
Streetlighting	3,575,265	3,501,067	-74,198	-2.1%	-7,660	-0.7%
Bishopsgate Police Station	3,403,005	3,199,143	-203,862	-6.0%	30,060	3.3%
City of London School	3,023,669	3,075,810	52,140	1.7%	-35,078	-3.8%
City of London Crematorium	2,812,736	2,861,788	49,051	1.7%	10,509	1.4%
Tower Bridge	2,326,102	2,497,477	171,374	7.4%	21,164	2.9%
GSMD – Silk St.	2,311,250	2,187,277	-123,972	-5.4%	-69,903	-11.9%
Mansion House	2,306,203	2,166,778	-139,425	-6.0%	15,724	2.5%
CoL School for Girls	2,250,246	2,292,777	42,531	1.9%	50,643	8.6%
New Street (21)	1,807,778	1,546,641	-261,137	-14.4%	-76,633	-18.3%
GSMD - Sundial Court	1,777,505	1,778,747	1,242	0.1%	-18,435	-3.9%
Walbrook Wharf	1,725,342	1,683,541	-41,801	-2.4%	124,905	30.8%
Wood Street Police Station	1,600,081	1,476,324	-123,757	-7.7%	-51,061	-12.9%
LMA	1,345,486	1,259,734	-85,752	-6.4%	2,787	0.7%

Snowhill Police Station	863,679	801,133	-62,547	-7.2%	-12,584	-5.2%
Animal Reception Centre	764,249	747,205	-17,044	-2.2%	13,753	6.6%
OS Hampstead Heath	660,653	695,690	35,037	5.3%	17,316	9.8%
OS Epping Forest	648,203	620,111	-28,091	-4.3%	-3,990	-2.2%
Tower Hill Coach & Car Park	542,795	551,307	8,512	1.6%	3,783	2.8%
OS Golders Hill & Extension	371,550	377,440	5,890	1.6%	3,911	4.2%
Upper Thames St. Tunnel Ltg	304,116	236,781	-67,335	-22.1%	-27,668	-35.5%
OS Parliament Hill	258,042	274,898	16,856	6.5%	7,503	9.0%
Minorities Car Park	246,730	246,730	0	0.0%	0	0.0%
Total	114,955,772	110,558,608	-4,397,164	-3.8%	-689,572	-2.3%

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-Dec 2019/20 compared to Apr-Dec 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 Q3 19/20 was colder than Q3 18/19 resulting in higher heating consumption. 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.

LCM (Smithfield): energy reduced by ~26% in Q3 compared to Q3 the previous year; contributing to a 17% overall reduction in Q1-3 when weather corrected. The following contributed to the Q3 result: -382 MWh (-12%) reduction in electricity, -494 MWh (-85%) reduction in cooling, and -300 MWh (-37%) reduction in heat. This was mainly achieved through improved Energy Team led improved BEMS strategies and daily monitoring to try to maintain comfort conditions as efficiently as possible. There have been many maintenance issues which are posing significant challenges towards sustaining these savings and the Energy Team are working with site FM and Skanska to resolve many maintenance issues. In addition to Energy Team will be commissioning a study to propose system modifications to allow improved control. Funding has been agreed in principle towards LED lighting for the Car Park; a project which will be delivered through CWP.

1.3 Guildhall Complex (GHC): energy remained static in Q3 compared to Q3 the previous year; and cumulative Q1-3 weather corrected energy was down by ~2%. In Q3 the energy for some areas/services has increased while others have decreased:

- -85 MWh (-16%): maintenance returning main East Wing ventilation to automatic operation;
- -53 MWh (-17%): ongoing vacating of Old Justice Rooms;
- -17 MWh (-57%): Energy Team led BEMS control improvements to North Wing ventilation;
- +167 MWh (+12%): increase in heat; however, when corrected for the weather the increase up to Q3 is marginal at only +1%.
- +76 MWh (+41%) increase in West/East Wing chiller system electricity. This is due to the chillers having been out of commission for maintenance during the same time in the previous year.

The Energy Team are in progress with delivering more BEMS control improvements, with particular focus on the East Wing ventilation systems and primary heating control. Funding has been provisionally secured towards the replacement of the West/East Wing chillers and the gas steam generators for humidification. The Energy Team will be supporting these projects to maximise the significant energy efficiency opportunities they present. Funding has also been

provisionally secured towards upgrades to the East Wing ventilation plant and installation of sub-metering for heating, cooling and power. These projects will be delivered by the Energy Team over the next 24 months.

1.4 Barbican Arts Centre (BAC): energy increased ~16% over Q3 compared to Q3 the previous year; and cumulative Q1-3 weather corrected energy was up by 6%. In Q3 the energy for some areas/services has increased while others have decreased:

- +345 MWh (+70%) increase in Exhibition Halls heating. According to Citigen data the heating over Nov-Dec has been significantly higher than historic levels for this time of year. The Energy Team are investigating this as it may be due to a metering issue rather than actual consumption.
- +217 MWh (+49%) increase in cooling and +72 MWh increase in electricity due to a fault with the on-site electric chillers which supply the Art Gallery. While these are out of action the main Citigen cooling system is being operated continuously for the Art Gallery needs and this is very inefficient.
- +116 MWh (+8%) increase in Barbican Art Centre heating over Q3 and +27% over Dec-19 alone. This appears to be due to a large increase in the background demand since Jul/Aug-19 and may relate to higher demands from close control areas (e.g. Art Gallery).

The Energy Team are working up a proposal for LED lighting within the car park driveways and surveying other areas for lighting upgrade opportunities.

1.5 Central Criminal Court (CCC): energy decreased -9.5% over Q3 compared to Q3 the previous year; and cumulative Q1-3 weather corrected energy was lower by -7.6%. This decrease was a result of lower heating consumption due to a -19% reduction in oil for the old boilers and a 13% reduction in gas for the new heating boilers. The site continues the more efficient operation of the smaller of the old oil boilers as the lead boiler and only one of the larger boilers for warm backup. This has saved significant oil consumption over the non-winter months but savings over the colder period are likely to be less significant.

The Energy Team are working with site FM to implement improvements to the new heating system control strategy to ensure it is operating as efficiently as possible. 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. Funding has been provisionally approved for a general LED lighting upgrade and the Energy Team will lead on developing this project over the coming months before final approval and then delivery.

1.6 GSMD Milton Ct. energy decreased -13% over Q3 compared to Q3 the previous year; and cumulative Q1-3 weather corrected energy was lower by -15%. Cooling has decreased by -57 MWh (-66%) and heating by -51 MWh (-13%) in Q3. This is likely due to a combination of ventilation control improvements undertaken by FM but potentially also some unverified Citigen metering which the Energy Team are investigating. Funding has been provisionally approved for an LED lighting upgrade for a few areas and the Energy Team will lead on developing this project over the coming months before final approval and then delivery.

1.7 Billingsgate Market: energy increased +7% over Q3 compared to Q3 the previous year; and cumulative Q1-3 weather corrected energy was higher by +14%. Gas consumption for heating boilers increased +95 MWh (+27%) in Q3 and was +47% higher in Dec-19 alone. It appears

since the end of Nov-19 the gas heating system has been operating more continuously than before; the Energy Team are investigating this with site FM.

1.8 Walbrook Wharf: energy increased +31% over Q3 compared to Q3 the previous year; and cumulative Q1-3 weather corrected energy was higher by +2.4%. Gas and electricity consumption increased significantly over Q3 for both the office block and depot areas. This is likely due to increased occupancy and resolution of the depot gas heating issues.

1.9 Energy Projects - Funding has been approved in principle for the Phase 1 Energy Projects at £1.2m. This consists 8 projects covering lighting and HVAC works within 7 corporate operational properties. The Energy Team will lead proposed projects through the regular route of the Project Procedure as a single gateway report, with gateway 2 being submitted in Jan/Feb 2020. To support this process the Energy Team are undertaking site surveys to further develop budget costs, risk management and implementation planning. A project breakdown is given in the appendix.

Conclusion

While the long-term energy performance remains below target the results for Q3 are a significant improvement. This indicates that, if sustained, the end of year target will be met. Continuation on this trajectory to achieve the 40% reduction target by 2025/26 will be dependant on the allocation of adequate resource and capital to the energy team.

Recommendation

Members are asked to note the contents of this report.

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