chapmanbdsp

Addendum note to energy statement

Project Name	LHR600	**Author**	Carlos Bernal
Project No	62016	**Revision**	Rev.03
Date	07/02/2024		

The Proposed Development's design has been developed in line with the Greater London Authority's (GLA) energy hierarchy, i.e. being 'lean, clean, green and seen', relevant National regulations, and the London Plan (2021) Stand-out targets.

While the targets form the overarching framework that is followed in the preparation of this statement, a recognition exists that under Part L 2021, it is more challenging for non-residential developments to achieve the carbon-saving requirements outlined in the London Plan 2021. This has been acknowledged by the cover note accompanying the updated Energy Assessment Guidance (June 2022). The cover notes states that:

"Initially, non-residential developments may find it more challenging to achieve significant on-site carbon reductions beyond Part L 2021 to meet both the energy efficiency target and the minimum 35 per cent improvement. This is because the new Part L baseline now includes low-carbon heating for non-residential developments but not for residential developments. However, planning applicants will still be expected to follow the energy hierarchy to maximise carbon savings before offsetting is considered."

Be Lean – Reduce energy demand.

The Proposed Development adopts best practices for thermal envelope performance in this building type. The U-values and air permeability significantly exceed Part L requirements, optimising insulation, minimising thermal bridging, and ensuring airtight construction to reduce heating and cooling demands. Additionally, passive design strategies—such as minimal window use—enhance energy efficiency, contributing to lower operational carbon emissions and aligning with sustainability goals while surpassing regulatory standards.

The carbon reduction achieved does not fully reflect the extensive efforts invested in the passive design. The Proposed Development exceeds the notional cooling demand by almost 60%.

Proposed New Building	Area weighted average non-domestic cooling demand (MJ/m²)	Total area weighted non-domestic cooling demand (MJ/m²)
Actual	303.6	447,476
Notional	732.4	1,079,484
Improvement %	59%	59%

Table 1 - energy demand

Be Clean – Supply energy efficiently

A desktop-based study was undertaken using the London Heat Map to identify if there are any district energy networks that the Proposed Development could connect to.

The study indicated that the existing E.ON DGV high-temperature network is approximately 3,400 meters from the Proposed Development. It is considered not viable to connect or serve heat to the locality as there is not an ambient loop DHN available in the area.

The Proposed Development is small <900KW of IT cooling; therefore, providing substantial district heating to surrounding buildings is not feasible. The chilled water return temperature is 23 degrees Celsius, so with exchanger/pipe losses for district heating, it will not be a viable option due to the size of the facility, as it would require considerable step-up equipment for usable heat.

The design team has looked at sitewide opportunities to reuse the heat rejected from the data hall's cooling systems. Apart from the building's small office (3 people), no other adjacent building on the site requires space heating. There was no opportunity to recover heat from the data hall as the office demand is not large enough to make this viable. The heat recovery strategy is applied to the space's ventilation and the data hall ventilation system.

The Proposed Development proposes highly efficient Chilled Water (CHW) Chillers with free cooling economisers to serve the data hall. These chillers reduce energy consumption, maximise performance, and maintain reliability.

The Proposed Development specifies DX VRF units for the ambient conditioning office small area and heat recovery units for ventilation, so these are highly efficient and feasible solutions for the size of this facility.

Be Green – Maximise renewable energy

To help offset this, a highly efficient cooling system has been incorporated alongside PV panels on available roof space, generating approximately 7,100 kWh/year.

The PV area has been maximised. However, a large plant area is required on the roof for air-cooled chillers, which require air circulation. Additional space is required for air handling unit equipment and pipework/ductwork distribution. Providing any other PV without impeding walking routes and emergency exits is not feasible.

To achieve net-zero emissions, the remaining carbon will be fully offset through the GLA's carbon offsetting scheme, as agreed with the London Borough of Hillingdon (LBH) under the Section 106 agreement.

Energy consumption forecast				
End used	Per m^2		Total site	
	Notional $kWh/m^2/yr$	Actual $kWh/m^2/yr$	Notional MWh/yr	Actual MWh/yr
Heating	0.33	0.24	0.49	0.35
Cooling	703.38	628.32	1,036.78	926.14
Fans and pumps	116.92	111.11	172.34	163.78
Lighting	50.13	29.6	73.89	43.63
DHW	1.27	2.85	1.87	4.20
Equipment	3324.82	3324.82	4,900.78	4,900.78
PV generation	0	6.29	0.00	9.27

Table 2 - energy consumption

The proposed development's energy consumption exceeds the notional lighting demand by 41%, fan and pump demand by 5%, and cooling demand by 11%. The observed energy reductions highlight the design efforts made to minimize energy consumption across key elements of the data centre.

As has been set out above, the operational requirements of this 'data repository' style data centre are relatively low when compared to those typically associated with traditional data centres such as hyperscale data centres. The development has sought to deliver savings in line with the energy hierarchy where possible, including maximising opportunities for renewable energy via PV provision.