

Technical Note

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This technical note summaries the differences in Part L and TM54 energy models between the submitted Energy Statement dated 30th November 2023 and the revised massing Energy Statement dated 9th December 2024.

The models were amended to suit the revised massing, which included changing from inclined facade to straight vertical facade and rationalisation of the facade to suit the massing. The revised massing also increased the overall treated floor area within the models.

The tables below provide a comparison table of amendments to the models performance parameters, followed by explanatory notes for each item.

Part L Model Specific Parameters	2023	2024	Comments
U-Values (Wall / Window) (W/m2K)	0.7 / 1.45	1.2 combined overall value	The 2024 model uses a combined facade U value in line with the calculation and value provided by the facade manufacturer. The 2023 model U values (separate for wall and glazing) were back calculated from the combined U value. The 2024 approach provides a more accurate model together with thermal bridging allowances. Overall the thermal performance for the facade is the same apart from a higher allowance for thermal bridging. See thermal bridging below.
Thermal Bridging (%)	0.59%	25.35%	Thermal bridging percentage included in 2023 was based on facade manufacturer calculations. This has increased in the 2024 model because the revised facade curved corners have not been detailed by the manufacturers. The default thermal bridging allowance has therefore been applied to the corner areas.

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DHW Efficiencies	3.45	3.53	Efficiency of hot water heat pump improved. Latest information provided from water to water heat pump manufacturers are providing SCOP's of around 3.99, which are much more efficient that we assumed in the 2023 model. Although we included a slight improvement in the efficiency in the 2024 model, we believe we have still been conservative at this stage.
Lighting (lm/W)	100 - 110	120	Lighting efficiency improvement based on high output LED fittings to achieve latest BCO targets and project brief. This should now be the normal standard for London office market. These fittings are now available off the shelf from good quality manufacturers.
Energy Consumption (Actual / Notional) (kWh/m2)	28.3 / 31.57	24.37 / 28.98	Both the notional and actual energy consumptions have improved because of the massing change.

TM54 Model Specific Parameters	2023	2024	Comments
Lab Small Power Load (W/m2)	130	90	Building load for laboratories reduced in agreement with British Land to align with recent study and analysis. The buildings electrical peak supply and cooling have been aligned with this reduced figure and tenant on floor power boards will be sized to this reduced number. The tenants will not be able to use a higher small power allowance. See following section for further information.
Lab Small Power Operating Hours	24/7 @ 100% peak load Lab Area	Daytime 10 hours @ 100% peak load Lab Area Overnight 14 hours @ 30% peak load Lab Area	The 2023 model provided for full laboratory use 24 hours a day. The nature of the proposed laboratories and associated write up spaces is such that they will not be fully operational overnight apart from some items of equipment such as fridges/freezers, mass spectrometers and autoclaves. The 30% load (27W/m2) is an estimate based on typical equipment allowance.
Office Small Power Diversity	100%	70%	The 2023 model applied design peak small power load provision throughout. The 2024 model applies a diversity in line with building maximum demand plant sizing

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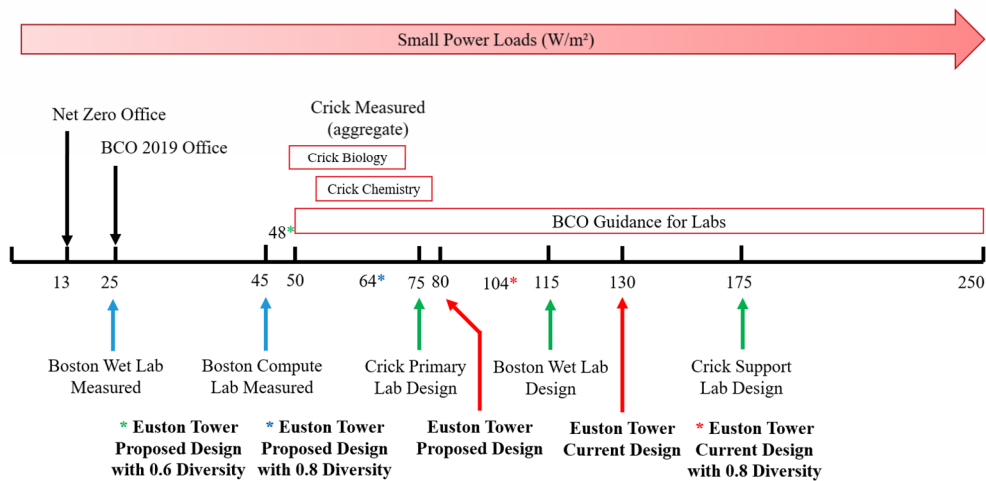
			(80%) together with small power use data. See section below for further details on the data collection used.
Server Usage Profile	24/7 @ 60% peak load	Daytime 10 hours @ 70% peak load Overnight 14 hours @ 30% peak load	The server load diversity has been aligned with the building small power diversity and operating profile as described previously in this table.

Laboratory Small Power

A presentation was made to British Land on laboratory small power consumption. As can be seen from the table below, that the proposal was to reduce the project small power allowance from 130W/m² to 80W/m². The BCO Science 2021 guide indicates that a typical laboratory load range would be 50-200W/m². British Land agreed to reduce the 130W/m² allowance to 90W/m².

Maximum Demand

Lab Enabled Electrical Load Allowances



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Office Small Power

Data collected by Arup from three different commercial buildings in central London, with different types of occupants shows that small power consumption is low even compared to BCO 2023 guidelines. The graph below shows a 24 hour period from one of the highest load recordings and consumption sits between 65 and 75% of the design load.

