

As-Constructed Compliance Note

Project: 20-23 Greville Street

Project No: R1026

Date: October 2022

Revision: 00

1.0 Summary

The energy modelling for the 20-23 Greville street development has been updated based on the as-installed MEP documentation and reflects the as-constructed building energy performance.

The energy statement for planning identified that the offices had the potential to achieve a 33% reduction whilst the shell and core areas defined as retail could achieve a 48% reduction. The overall development therefore had the potential to achieve an average 42.6% reduction in emissions over the baseline and exceed the planning target of which 15.2% was from LZC technology. This was based upon an assumption that the mix would be office and retail rather than office restaurant and light industrial or a combination of these uses as approved under the planning consent.

The section 106 agreement states that on construction the development must achieve a 42.6% reduction in emissions over the baseline building emissions as well as including 20.9% reduction in emissions associated with the provision of LZC technologies (Heat pumps and PVs)

The above-mentioned mix of uses was assessed to achieve a 36.4% emissions reduction against the original target of 42.6%. In order to ensure compliance, the as-built scheme is comprised only of office and retail as per the original assessment and does not include any restaurant or light industrial uses. This achieves a total reduction of 52.0% as demonstrated in the as-built BRUKL assessment which is in excess of the S106 targets.

2.0 Extract of Section 106 agreement

2.23	"the Energy Efficiency and Renewable Energy Plan"	<p>a strategy setting out a package of measures to be adopted by the Owner in the management of the Development with a view to reducing carbon energy emissions through (but not be limited to) the following:-</p> <p>a) the incorporation of the measures set out in the submission document entitled Energy Statement for Planning for 20-23 Greville Street, London dated January 2018 by MLM Consulting Engineers Limited to achieve a 42.6% reduction in CO2 emissions beyond the Part L 2013 baseline;</p> <p>b) further details (including detailed drawings, any necessary surveys and system specifications) of how the Owner will reduce the Development's carbon emissions from renewable energy technologies located on the Property ensuring the Owner will target a reduction of at least 20.9% in carbon emissions in relation to the Property using a combination of complementary low and zero carbon technologies;</p> <p>c) separate metering of all low and zero carbon technologies to enable the monitoring of energy and carbon emissions and savings;</p> <p>d) a building management system being an electronic system to monitor the Development's heating, cooling and the hours of use of plant;</p> <p>e) measures to enable future connection to a local energy network that has been designed in accordance with the "CIBSE heat networks; code of practice for the UK" at the boundary of the Property including:</p> <ul style="list-style-type: none">- safeguarded space for a future heat exchanger;- provisions made in the building fabric / design (such as soft-points in the building plant room walls) to allow pipes to be routed through from the outside to a later date;
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		<ul style="list-style-type: none"> - the provision of domestic hot water isolation valves to facilitate the connection of an interfacing heat exchanger; - provision for external buried pipework routes to be safeguarded to a nearby road or similar where connection to the decentralised heat network would be made. - Provision of contact details of the person(s) responsible for the development's energy provision for the purpose of engagement over future connection to a network. <p>f) include a pre-Implementation design-stage review by an appropriately qualified and recognised independent professional in respect of the Property including full design stage National Calculation Method (NCM) calculations certifying that the measures incorporated in the Energy Efficiency and Renewable Energy Plan are achievable in the Development and satisfy the aims and objectives of the Council's strategic policies on the reduction of carbon emissions contained within its development plan;</p> <p>g) measures to secure a post construction review of the Development by an appropriately qualified and recognised independent professional in respect of the Property (including but not limited to photographs, installation contracts and full As-Built NCM calculations) certifying that the measures incorporated in the Energy Efficiency and Renewable Energy Plan have been implemented in the Development and will be maintainable in the Development's future management and occupation; and</p> <p>h) identifying means of ensuring the provision of information to the Council and provision of a mechanism for review and update as required from time to time</p>
2.24	*the Highways Contribution*	the sum of £108,241 (one hundred and eight thousand and two hundred and forty one pounds) to be paid by the Owner to the

3.0 As-built building fabric standards

The table below summarises the as-built building fabric performance. The wall performance fails to meet targets for new-build projects but is within the target of 0.55W/m²K as agreed for refurbished elements of the existing construction. This is not to the detriment of the outcome of the assessment which still achieves target emission reductions.

Element	U _{a-Limit}	U _{a-Calc}	U _{i-Calc}	Surface where the maximum value occurs*
Wall**	0.35	0.5	0.54	External Wall
Floor	0.25	0.16	0.55	Exposed Floor
Roof	0.25	0.19	0.23	Roof
Windows***, roof windows, and rooflights	2.2	1.06	1.07	New Window 2-3 (1)
Personnel doors	2.2	2.1	2.1	Door
Vehicle access & similar large doors	1.5	-	-	No vehicle doors in project
High usage entrance doors	3.5	-	-	No high usage entrance doors in project
U _{a-Limit} = Limiting area-weighted average U-values [W/(m ² K)] U _{a-Calc} = Calculated area-weighted average U-values [W/(m ² K)] U _{i-Calc} = Calculated maximum individual element U-values [W/(m ² K)] * There might be more than one surface where the maximum U-value occurs. ** Automatic U-value check by the tool does not apply to curtain walls whose limiting standard is similar to that for windows. *** Display windows and similar glazing are excluded from the U-value check. N.B.: Neither roof ventilators (inc. smoke vents) nor swimming pool basins are modelled or checked against the limiting standards by the tool.				

Air Permeability	Worst acceptable standard	This building
m ³ /(h.m ²) at 50 Pa	10	5.8

4.0 As-built Mechanical Commissioning Standards

All mechanical systems have been commissioned to the standards set out in the Webb Yates Specification. All mechanical commissioning reports and certificates can be found within the O&Ms.

5.0 As-built Electrical Commissioning Standards

All electrical systems have been commissioned to the standards set out in the Webb Yates Specification. All electrical commissioning reports and certificates can be found within the O&Ms.

6.0 As-built BRUKL Extract

BRUKL Output Document



Compliance with England Building Regulations Part L 2013

Project name

Greville Street Offices

As built

Date: Thu Sep 15 13:42:35 2022

Administrative information

Building Details

Address: Offices, 20-23 Greville Street, London, EC1N 8SS

Certification tool

Calculation engine: TAS

Calculation engine version: "v9.5.4"

Interface to calculation engine: TAS

Interface to calculation engine version: v9.5.4

BRUKL compliance check version: v5.6.b.0

Certifier details

Name: Audley Franklin

Telephone number: 07939171969

Address: 20 - 22 Wenlock Road, London, N1 7GU

Criterion 1: The calculated CO₂ emission rate for the building must not exceed the target

CO ₂ emission rate from the notional building, kgCO ₂ /m ² .annum	22.6
Target CO ₂ emission rate (TER), kgCO ₂ /m ² .annum	22.6
Building CO ₂ emission rate (BER), kgCO ₂ /m ² .annum	13.4
Are emissions from the building less than or equal to the target?	BER =< TER
Are as built details the same as used in the BER calculations?	Separate submission

Criterion 2: The performance of the building fabric and fixed building services should achieve reasonable overall standards of energy efficiency

Values which do not achieve the standards in the Non-Domestic Building Services Compliance Guide and Part L are displayed in red.

Building fabric

Element	U _a -Limit	U _a -Calc	U _i -Calc	Surface where the maximum value occurs*
Wall**	0.35	0.5	0.54	External Wall
Floor	0.25	0.16	0.55	Exposed Floor
Roof	0.25	0.19	0.23	Roof
Windows***, roof windows, and rooflights	2.2	1.06	1.07	New Window 2-3 (1)
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m ³ /(h.m ²) at 50 Pa	10	5.8

Technical Data Sheet (Actual vs. Notional Building)

Building Global Parameters

	Actual	Notional
Area [m ²]	2331	2331
External area [m ²]	3326	3326
Weather	LON	LON
Infiltration [m ³ /hm ² @ 50Pa]	6	3
Average conductance [W/K]	1545	1448
Average U-value [W/m ² K]	0.46	0.44
Alpha value* [%]	14.29	14.29

* Percentage of the building's average heat transfer coefficient which is due to thermal bridging

Building Use

% Area	Building Type
	A1/A2 Retail/Financial and Professional services
	A3/A4/A5 Restaurants and Cafes/Drinking Est./Takeaways
99	B1 Offices and Workshop businesses
	B2 to B7 General Industrial and Special Industrial Groups
	B8 Storage or Distribution
	C1 Hotels
	C2 Residential Institutions: Hospitals and Care Homes
	C2 Residential Institutions: Residential schools
	C2 Residential Institutions: Universities and colleges
	C2A Secure Residential Institutions
	Residential spaces
	D1 Non-residential Institutions: Community/Day Centre
	D1 Non-residential Institutions: Libraries, Museums, and Galleries
	D1 Non-residential Institutions: Education
	D1 Non-residential Institutions: Primary Health Care Building
	D1 Non-residential Institutions: Crown and County Courts
	D2 General Assembly and Leisure, Night Clubs, and Theatres
	Others: Passenger terminals
	Others: Emergency services
1	Others: Miscellaneous 24hr activities
	Others: Car Parks 24 hrs
	Others: Stand alone utility block

Energy Consumption by End Use [kWh/m²]

	Actual	Notional
Heating	2.05	1.78
Cooling	6.61	9.26
Auxiliary	7.03	8.01
Lighting	8.44	21.66
Hot water	5.53	6.35
Equipment*	38.86	38.86
TOTAL**	29.65	47.08

* Energy used by equipment does not count towards the total for consumption or calculating emissions.

** Total is net of any electrical energy displaced by CHP generators, if applicable.

Energy Production by Technology [kWh/m²]

	Actual	Notional
Photovoltaic systems	3.52	0
Wind turbines	0	0
CHP generators	0	0
Solar thermal systems	0	0

Energy & CO₂ Emissions Summary

	Actual	Notional
Heating + cooling demand [MJ/m ²]	104.76	142.74
Primary energy* [kWh/m ²]	90.12	128.88
Total emissions [kg/m ²]	13.4	22.6

* Primary energy is net of any electrical energy displaced by CHP generators, if applicable.