

BRUKL Output Document



Compliance with England Building Regulations Part L 2021

Project name

Queens Street, Tottenham

As designed

Date: Tue Apr 09 12:50:51 2024

Administrative information

Building Details

Address: Queen St, London, N17 8HZ,

Certifier details

Name: Sushil Pathak

Telephone number: 01344 628821

Address: Cudd Bentley, Ashurst Manor, Sunninghill, SL5 7DD

Certification tool

Calculation engine: SBEM

Calculation engine version: v6.1.d.0

Interface to calculation engine: Energy Simulator

Interface to calculation engine version: 10.10.0.199

BRUKL compliance module version: v6.1.d.0

Foundation area [m²]: 245

The CO₂ emission and primary energy rates of the building must not exceed the targets

Target CO ₂ emission rate (TER), kgCO ₂ /m ² annum	1.86
Building CO ₂ emission rate (BER), kgCO ₂ /m ² annum	1.54
Target primary energy rate (TPER), kWh/m ² annum	19.4
Building primary energy rate (BPER), kWh/m ² annum	14.32
Do the building's emission and primary energy rates exceed the targets?	BER <= TER BPER <= TPER

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

Fabric element	U _a -Limit	U _a -Calc	U _i -Calc	First surface with maximum value
Walls*	0.26	0.23	0.23	Wall 1
Floors	0.18	0.18	0.18	Internal Floor 1
Pitched roofs	0.16	-	-	No heat loss pitched roofs
Flat roofs	0.18	0.15	0.15	Exposed Roof 1
Windows** and roof windows	1.6	1.4	1.4	Window 1
Rooflights***	2.2	-	-	No external rooflights
Personnel doors^	1.6	-	-	No external personnel doors
Vehicle access & similar large doors	1.3	-	-	No external vehicle access doors
High usage entrance doors	3	-	-	No external high usage entrance doors
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)] * 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. *** Values for rooflights refer to the horizontal position. ^ For fire doors, limiting U-value is 1.8 W/m ² K NB: Neither roof ventilators (inc. smoke vents) nor swimming pool basins are modelled or checked against the limiting standards by the tool.				

Air permeability	Limiting standard	This building
m ³ /(h.m ²) at 50 Pa	8	3

Building services

For details on the standard values listed below, system-specific guidance, and additional regulatory requirements, refer to the Approved Documents.

Whole building lighting automatic monitoring & targeting with alarms for out-of-range values	NO
Whole building electric power factor achieved by power factor correction	<0.9

1- Office

	Heating efficiency	Cooling efficiency	Radiant efficiency	SFP [W/(l/s)]	HR efficiency
This system	3.5	4	-	-	-
Standard value	2.5*	N/A	N/A	N/A	N/A
Automatic monitoring & targeting with alarms for out-of-range values for this HVAC system					NO
* Standard shown is for all types >12 kW output, except absorption and gas engine heat pumps.					

2- WC's

	Heating efficiency	Cooling efficiency	Radiant efficiency	SFP [W/(l/s)]	HR efficiency
This system	1	-	-	-	-
Standard value	N/A	N/A	N/A	N/A	N/A
Automatic monitoring & targeting with alarms for out-of-range values for this HVAC system					NO

3- Circulation Area

	Heating efficiency	Cooling efficiency	Radiant efficiency	SFP [W/(l/s)]	HR efficiency
This system	1	-	-	-	-
Standard value	N/A	N/A	N/A	N/A	N/A
Automatic monitoring & targeting with alarms for out-of-range values for this HVAC system					NO

1- Default DHW

	Water heating efficiency	Storage loss factor [kWh/litre per day]
This building	1	-
Standard value	1	N/A

Zone-level mechanical ventilation, exhaust, and terminal units

ID	System type in the Approved Documents
A	Local supply or extract ventilation units
B	Zonal supply system where the fan is remote from the zone
C	Zonal extract system where the fan is remote from the zone
D	Zonal balanced supply and extract ventilation system
E	Local balanced supply and extract ventilation units
F	Other local ventilation units
G	Fan assisted terminal variable air volume units
H	Fan coil units
I	Kitchen extract with the fan remote from the zone and a grease filter

NB: Limiting SFP may be increased by the amounts specified in the Approved Documents if the installation includes particular components.

Zone name	SFP [W/(l/s)]										HR efficiency	
	ID of system type	A	B	C	D	E	F	G	H	I	Zone	Standard
	Standard value	0.3	1.1	0.5	2.3	2	0.5	0.5	0.4	1		
U2.1F.OFF		-	-	-	-	1.1	-	-	-	-	0.8	N/A
U2.1F.WC		-	-	0.3	-	-	-	-	-	-	-	N/A
U2.GF.WC		-	-	0.3	-	-	-	-	-	-	-	N/A

Zone name	SFP [W/(l/s)]										HR efficiency	
	ID of system type	A	B	C	D	E	F	G	H	I	Zone	Standard
U2.GF.WC1	Standard value	0.3	1.1	0.5	2.3	2	0.5	0.5	0.4	1	-	N/A

General lighting and display lighting		General luminaire	Display light source	
Zone name		Efficacy [lm/W]	Efficacy [lm/W]	Power density [W/m²]
	Standard value	95	80	0.3
U2.1F.OFF		95	-	-
U2.1F.WC		95	-	-
U2.GF.WC		95	-	-
U2.GF.WC1		95	-	-
U2.1F.CIR2		95	-	-
U2.GF.CIR		95	-	-
U2.GF.CIR1		95	-	-
U2.GF.CIR2		95	-	-
U2.GF.CIR3		95	-	-
U2.1F.LIFT		95	-	-
U2.1F.RIS		95	-	-
U2.1F.RIS2		95	-	-
U2.GF.LIFT		95	-	-
U2.GF.UM		95	-	-
U2.GF.WH		95	-	-

The spaces in the building should have appropriate passive control measures to limit solar gains in summer

Zone	Solar gain limit exceeded? (%)	Internal blinds used?
U2.1F.OFF	NO (-47.3%)	NO
U2.GF.UM	N/A	N/A
U2.GF.WH	NO (-68.9%)	NO

Regulation 25A: Consideration of high efficiency alternative energy systems

Were alternative energy systems considered and analysed as part of the design process?	YES
Is evidence of such assessment available as a separate submission?	YES
Are any such measures included in the proposed design?	YES

Technical Data Sheet (Actual vs. Notional Building)

Building Global Parameters			Building Use	
	Actual	Notional	% Area	Building Type
Floor area [m ²]	2508.5	2508.5		Retail/Financial and Professional Services
External area [m ²]	7382.9	7382.9		Restaurants and Cafes/Drinking Establishments/Takeaways
Weather	LON	LON		Offices and Workshop Businesses
Infiltration [m ³ /hm ² @ 50Pa]	3	5		General Industrial and Special Industrial Groups
Average conductance [W/K]	1747.05	2205.41	100	Storage or Distribution
Average U-value [W/m ² K]	0.24	0.3		Hotels
Alpha value* [%]	75.29	21.93		Residential Institutions: Hospitals and Care Homes
* Percentage of the building's average heat transfer coefficient which is due to thermal bridging				Residential Institutions: Residential Schools
				Residential Institutions: Universities and Colleges
				Secure Residential Institutions
				Residential Spaces
				Non-residential Institutions: Community/Day Centre
				Non-residential Institutions: Libraries, Museums, and Galleries
				Non-residential Institutions: Education
				Non-residential Institutions: Primary Health Care Building
				Non-residential Institutions: Crown and County Courts
				General Assembly and Leisure, Night Clubs, and Theatres
				Others: Passenger Terminals
				Others: Emergency Services
				Others: Miscellaneous 24hr Activities
				Others: Car Parks 24 hrs
				Others: Stand Alone Utility Block

Energy Consumption by End Use [kWh/m²]

	Actual	Notional
Heating	6.65	3.33
Cooling	1.44	0.91
Auxiliary	0.65	0.63
Lighting	15.29	9.59
Hot water	3.96	3.96
Equipment*	31.79	31.79
TOTAL**	27.99	18.42

* 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	19.43	5.47
Wind turbines	0	0
CHP generators	0	0
Solar thermal systems	0	0
<i>Displaced electricity</i>	<i>19.43</i>	<i>5.47</i>

Energy & CO₂ Emissions Summary

	Actual	Notional
Heating + cooling demand [MJ/m ²]	243.54	240.94
Primary energy [kWh/m ²]	14.32	19.4
Total emissions [kg/m ²]	1.54	1.86

HVAC Systems Performance									
System Type	Heat dem MJ/m2	Cool dem MJ/m2	Heat con kWh/m2	Cool con kWh/m2	Aux con kWh/m2	Heat SSEFF	Cool SSEER	Heat gen SEFF	Cool gen SEER
[ST] Split or multi-split system, [HS] ASHP, [HFT] Electricity, [CFT] Electricity									
Actual	102.5	118.9	8.7	11.6	4.6	3.26	2.84	3.5	4
Notional	73.9	116.4	7.8	7.3	3.8	2.64	4.4	---	---
[ST] Other local room heater - unfanned, [HS] Direct or storage electric heater, [HFT] Electricity, [CFT] Electricity									
Actual	93.1	39.5	32.3	0	6.6	0.8	0	1	0
Notional	77	47.4	16	0	13.1	1.34	0	---	---
[ST] Other local room heater - unfanned, [HS] Direct or storage electric heater, [HFT] Electricity, [CFT] Electricity									
Actual	271.6	23.4	94.3	0	0	0.8	0	1	0
Notional	190.6	27.2	39.5	0	0	1.34	0	---	---
[ST] No Heating or Cooling									
Actual	194.2	51	0	0	0	0	0	0	0
Notional	170.1	82	0	0	0	0	0	---	---

Key to terms

Heat dem [MJ/m2] = Heating energy demand
 Cool dem [MJ/m2] = Cooling energy demand
 Heat con [kWh/m2] = Heating energy consumption
 Cool con [kWh/m2] = Cooling energy consumption
 Aux con [kWh/m2] = Auxiliary energy consumption
 Heat SSEFF = Heating system seasonal efficiency (for notional building, value depends on activity glazing class)
 Cool SSEER = Cooling system seasonal energy efficiency ratio
 Heat gen SSEFF = Heating generator seasonal efficiency
 Cool gen SSEER = Cooling generator seasonal energy efficiency ratio
 ST = System type
 HS = Heat source
 HFT = Heating fuel type
 CFT = Cooling fuel type