BRUKL Output Document

HM Government

Compliance with England Building Regulations Part L 2021

Project name

16 Whitfield Street - Refurbished BE GREEN

As designed

Date: Fri Mar 14 17:29:20 2025

Administrative information

Building Details

Address: 16 Whitfield Street - Refurbished BE GREEN, London, W1T 2RA

Certifier details

Name: Luke Taylor

Telephone number: 07887792272

Address: 150 Hutton Road, Shenfield, CM15 8NL

Certification tool

Calculation engine: SBEM

Calculation engine version: v6.1.e.2

Interface to calculation engine: DesignBuilder SBEM

Interface to calculation engine version: v7.3.1

BRUKL compliance module version: v6.1.e.1

Foundation area [m²]: 3172.64

The CO_2 emission and primary energy rates of the building must not exceed the targets

The building does not comply with England Building Regulations Part L 2021

Target CO_2 emission rate (TER), $kgCO_2/m^2.annum$	2.47	
Building CO_2 emission rate (BER), $kgCO_2/m^2.annum$	5.69	
Target primary energy rate (TPER), $kWh_{PE}/m^2.annum$	25.75	
Building primary energy rate (BPER), $kWh_{PE}/m^2.annum$	62.21	
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	$U_{a\text{-}Limit}$	$U_{a\text{-}Calc}$	$U_{i\text{-}Calc}$	First surface with maximum value
Walls*	0.26	0.35	0.35	3rd Floor - Office_W_9
Floors	0.18	0.17	0.2	0 Basement - FM office_S_3
Pitched roofs	0.16	-	-	No heat loss pitched roofs
Flat roofs	0.18	0.18	0.35	0 Basement - FM office_R_5
Windows** and roof windows	1.6	1.4	1.4	3rd Floor - Office_G_10
Rooflights***	2.2	-	-	No external rooflights
Personnel doors^	1.6	2.2	2.2	2nd Floor - Office_D_27
Vehicle access & similar large doors	1.3	-	-	No external vehicle access doors
High usage entrance doors	3	-	-	No external high usage entrance doors

$U_{a\text{-}Limit}$ = Limiting area-weighted average U-values [W/(m²K)] $U_{i\text{-}Calc}$ = Calculated maximum individual element U-values [W/(m²K)]

$U_{a\text{-}Calc}$ = Calculated area-weighted average U-values [W/(m²K)]

* 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/m²K

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	8

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	>0.95

1- REYQ16U VRV

	Heating efficiency	Cooling efficiency	Radiant efficiency	SFP [W/(l/s)]	HR efficiency
This system	4.3	6.3	-	1.9	0.89
Standard value	2.5*	5	N/A	2^	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.

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

2- REYQ12U VRV

	Heating efficiency	Cooling efficiency	Radiant efficiency	SFP [W/(l/s)]	HR efficiency
This system	4.7	6.5	-	1.9	0.89
Standard value	2.5*	5	N/A	2^	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.

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

3- REYQ18U VRV

	Heating efficiency	Cooling efficiency	Radiant efficiency	SFP [W/(l/s)]	HR efficiency
This system	4.4	6.2	-	1.9	0.89
Standard value	2.5*	5	N/A	2^	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.

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

1- POU

	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		
Standard value	0.3	1.1	0.5	2.3	2	0.5	0.5	0.4	1	Zone	Standard
0 Basement - WC Shower	-	-	0.4	-	-	-	-	-	-	-	N/A
0 Basement - WC	-	-	0.4	-	-	-	-	-	-	-	N/A
0 Basement - Shower Room	-	-	0.4	-	-	-	-	-	-	-	N/A
2nd Floor - Toilet	-	-	-	-	1.9	-	-	-	-	0.89	N/A
2nd Floor - Staircase	-	-	-	-	1.9	-	-	-	-	0.89	N/A
2nd Floor - Staircase	-	-	-	-	1.9	-	-	-	-	0.89	N/A
3rd Floor - WC	-	-	-	-	1.9	-	-	-	-	0.89	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
3rd Floor - Office	120	-	-
0 Basement - FM office	120	-	-
0 Basement - Office	120	-	-
0 Ground Floor - Affordable Office	120	-	-
0 Ground Floor - Reception	120	15	9
2nd Floor - Office	120	-	-
1st Floor - Office	120	-	-
0 Basement - Circulation	120	-	-
0 Basement - WC Shower	120	-	-
0 Basement - Booster Tank	120	-	-
0 Basement - WC	120	-	-
0 Basement - Shower Room	120	-	-
0 Basement - Staircase	120	-	-
0 Basement - Cycle Store	120	-	-
0 Basement - Staircase	120	-	-
0 Basement - Staircase	120	-	-
0 Ground Floor - Cycle Store	120	-	-
0 Ground Floor - Staircase	120	-	-
0 Ground Floor - Staircase	120	-	-
0 Ground Floor - Staircase	120	-	-
2nd Floor - Toilet	120	-	-
2nd Floor - Staircase	120	-	-
2nd Floor - Staircase	120	-	-
1st Floor - WC	120	-	-
1st Floor - Staircase	120	-	-
1st Floor - Toilet	120	-	-
1st Floor - Staircase	120	-	-
3rd Floor - Staircase	120	-	-
3rd Floor - WC	120	-	-
3rd Floor - Staircase	120	-	-

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?
3rd Floor - Office	NO (-20.9%)	YES
0 Basement - FM office	N/A	N/A
0 Basement - Office	N/A	N/A
0 Ground Floor - Affordable Office	N/A	N/A
0 Ground Floor - Reception	YES (+13.4%)	YES
2nd Floor - Office	NO (-18.7%)	YES
1st Floor - Office	NO (-24.5%)	YES

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

	Actual	Notional
Floor area [m^2]	3615.2	3615.2
External area [m^2]	5212	5212
Weather	LON	LON
Infiltration [m^3/hm^2@ 50Pa]	8	3
Average conductance [W/K]	2072.74	1612.9
Average U-value [W/m^2K]	0.4	0.31
Alpha value* [%]	16.55	19.55

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

Building Use

% Area	Building Type
	Retail/Financial and Professional Services
	Restaurants and Cafes/Drinking Establishments/Takeaways
100	**Offices and Workshop Businesses**
	General Industrial and Special Industrial Groups
	Storage or Distribution
	Hotels
	Residential Institutions: Hospitals and Care Homes
	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/m^2]

	Actual	Notional
Heating	0.98	1.11
Cooling	6.32	4.55
Auxiliary	8.2	7.05
Lighting	13.49	9.53
Hot water	15.4	15.4
Equipment*	37.59	37.59
TOTAL**	**44.39**	**37.65**

* 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/m^2]

	Actual	Notional
Photovoltaic systems	2.1	20.17
Wind turbines	0	0
CHP generators	0	0
Solar thermal systems	0	0
Displaced electricity	*2.1*	*20.17*

Energy & CO_2 Emissions Summary

	Actual	Notional
Heating + cooling demand [MJ/m^2]	140.52	107.45
Primary energy [kWh_{PE}/m^2]	62.21	25.75
Total emissions [kg/m^2]	5.69	2.47

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 SSEEF	Cool SSEER	Heat gen SEFF	Cool gen SEER
[ST] Variable refrigerant flow, [HS] ASHP, [HFT] Electricity, [CFT] Electricity										
	Actual	13.5	113.4	0.9	8	9	4.05	3.95	4.3	6.3
	Notional	13	92.5	1.4	5.8	8.2	2.64	4.4	----	----
[ST] Variable refrigerant flow, [HS] ASHP, [HFT] Electricity, [CFT] Electricity										
	Actual	29.8	70	1.9	4.8	8.9	4.43	4.08	4.7	6.5
	Notional	14	60.3	1.5	3.8	7	2.64	4.4	----	----
[ST] Variable refrigerant flow, [HS] ASHP, [HFT] Electricity, [CFT] Electricity										
	Actual	14.6	106.4	1	7.6	9	4.15	3.89	4.4	6.2
	Notional	11.1	84.5	1.2	5.3	7.8	2.64	4.4	----	----
[ST] No Heating or Cooling										
	Actual	268.9	27.9	0	0	2.4	0	0	0	0
	Notional	180	22.3	0	0	2	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