BRUKL Output Document

HM Government

Compliance with England Building Regulations Part L 2013

Project name

Eversolt Street

As designed

Date: Tue Nov 08 08:15:29 2022

Administrative information

Building Details

Address: ,

Certification tool

Calculation engine: SBEM

Calculation engine version: v5.6.b.0

Interface to calculation engine: DesignBuilder SBEM

Interface to calculation engine version: v6.1.8

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

Certifier details

Name: Neil Ingham

Telephone number:

Address: Holborn Tower, London,

Criterion 1: The calculated CO_2 emission rate for the building must not exceed the target

The building does not comply with England Building Regulations Part L 2013

CO_2 emission rate from the notional building, $kgCO_2/m^2.annum$	58.4
Target CO_2 emission rate (TER), $kgCO_2/m^2.annum$	58.4
Building CO_2 emission rate (BER), $kgCO_2/m^2.annum$	79.2
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	$U_{a\text{-}Limit}$	$U_{a\text{-}Calc}$	$U_{i\text{-}Calc}$	Surface where the maximum value occurs*
Wall**	0.35	0.55	0.55	"Block 1 - CIRCULATION 1_P_8"
Floor	0.25	0.25	0.25	"Block 1 - CIRCULATION 1_S_3"
Roof	0.25	0.18	0.18	"Block 1 - CIRCULATION 1_R_5"
Windows***, roof windows, and rooflights	2.2	1.8	1.8	"Block 2 - BAR & SERVERY_G_11"
Personnel doors	2.2	3	3	"Block 2 - RESTAURANT_D_15"
Vehicle access & similar large doors	1.5	-	-	"No external vehicle access doors"
High usage entrance doors	3.5	-	-	"No external high usage entrance doors"

$U_{a\text{-}Limit}$ = Limiting area-weighted average U-values $[W/(m^2K)]$
$U_{a\text{-}Calc}$ = Calculated area-weighted average U-values $[W/(m^2K)]$
$U_{i\text{-}Calc}$ = Calculated maximum individual element U-values $[W/(m^2K)]$

* 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	25

Building services

The standard values listed below are minimum values for efficiencies and maximum values for SFPs. Refer to the Non-Domestic Building Services Compliance Guide for details.

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- Bivalent

	Heating efficiency	Cooling efficiency	Radiant efficiency	SFP [W/(l/s)]	HR efficiency
This system	0.84	3.2	-	-	-
Standard value	0.91*	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 gas single boiler systems <=2 MW output. For single boiler systems >2 MW or multi-boiler systems, (overall) limiting efficiency is 0.86. For any individual boiler in a multi-boiler system, limiting efficiency is 0.82.

1- Gas

	Water heating efficiency	Storage loss factor [kWh/litre per day]
This building	0.84	0.001
Standard value	0.8	N/A

Local mechanical ventilation, exhaust, and terminal units

ID	System type in Non-domestic Building Services Compliance Guide
A	Local supply or extract ventilation units serving a single area
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 supply and extract ventilation units serving a single room or zone with heating and heat recovery
E	Local supply and extract ventilation system serving a single area with heating and heat recovery
F	Other local ventilation units
G	Fan-assisted terminal VAV unit
H	Fan coil units
I	Zonal extract system where the fan is remote from the zone with grease filter

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	1.9	1.6	0.5	1.1	0.5	1	Zone	Standard
Block 1 - WC 1	-	2.2	0.5	-	-	-	-	-	-	-	N/A
Block 1 - OFFICE	-	2.2	0.5	-	-	-	-	-	-	-	N/A
Block 1 - KITCHEN	-	2.2	-	-	-	-	-	-	0.9	-	N/A
Block 1 - STAFF ROOM	-	2.2	-	-	-	-	-	-	-	-	N/A
Block 1 - WC 2	-	2.2	0.5	-	-	-	-	-	-	-	N/A
Block 1 - WC	-	2.2	0.5	-	-	-	-	-	-	-	N/A
Block 2 - BAR & SERVERY	-	-	0.5	-	-	-	-	-	-	-	N/A
Block 2 - WC	-	2.2	0.5	-	-	-	-	-	-	-	N/A
Block 2 - RESTAURANT	-	-	0.5	-	-	-	-	-	-	-	N/A

General lighting and display lighting

Zone name	Luminous efficacy [lm/W]			
	Luminaire	Lamp	Display lamp	General lighting [W]
Standard value	60	60	22	
Block 1 - STORE 1	51	-	-	34
Block 1 - CELLAR	51	-	-	74

General lighting and display lighting	Luminous efficacy [lm/W]			
Zone name	**Luminaire**	**Lamp**	**Display lamp**	**General lighting [W]**
Standard value	60	60	22	
Block 1 - STORE 2	51	-	-	27
Block 1 - PLANT 1	51	-	-	92
Block 1 - PLANT	51	-	-	162
Block 1 - STORE 3	51	-	-	27
Block 1 - STORE	51	-	-	11
Block 1 - CIRCULATION 1	-	51	-	82
Block 1 - WC 1	-	51	-	401
Block 1 - OFFICE	51	-	-	122
Block 1 - KITCHEN	-	51	-	1068
Block 1 - CIRCULATION 2	-	51	-	59
Block 1 - STAFF ROOM	-	51	-	251
Block 1 - CIRCULATION	-	51	-	35
Block 1 - WC 2	-	51	-	46
Block 1 - WC	-	51	-	45
Block 2 - BAR & SERVERY	-	51	-	616
Block 2 - WC	-	51	-	57
Block 2 - RESTAURANT	-	51	51	832
Block 2 - CIRCULATION	-	51	-	67

Criterion 3: The spaces in the building should have appropriate passive control measures to limit solar gains

Zone	Solar gain limit exceeded? (%)	Internal blinds used?
Block 1 - CIRCULATION 1	N/A	N/A
Block 1 - WC 1	N/A	N/A
Block 1 - OFFICE	N/A	N/A
Block 1 - KITCHEN	N/A	N/A
Block 1 - CIRCULATION 2	N/A	N/A
Block 1 - STAFF ROOM	N/A	N/A
Block 1 - CIRCULATION	N/A	N/A
Block 1 - WC 2	N/A	N/A
Block 1 - WC	N/A	N/A
Block 2 - BAR & SERVERY	NO (-76.9%)	NO
Block 2 - WC	N/A	N/A
Block 2 - RESTAURANT	NO (-35.7%)	NO
Block 2 - CIRCULATION	N/A	N/A

Criterion 4: The performance of the building, as built, should be consistent with the calculated BER

Separate submission

Criterion 5: The necessary provisions for enabling energy-efficient operation of the building should be in place

Separate submission

EPBD (Recast): Consideration of alternative energy systems

Were alternative energy systems considered and analysed as part of the design process?	NO
Is evidence of such assessment available as a separate submission?	NO
Are any such measures included in the proposed design?	NO

Technical Data Sheet (Actual vs. Notional Building)

Building Global Parameters

	Actual	Notional
Area [m^2]	558	558
External area [m^2]	1027.7	1027.7
Weather	LON	LON
Infiltration [m^3/hm^2@ 50Pa]	25	3
Average conductance [W/K]	484.04	302.49
Average U-value [W/m^2K]	0.47	0.29
Alpha value* [%]	8.42	10.94

* 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
100	**A3/A4/A5 Restaurants and Cafes/Drinking Est./Takeaways**
	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
	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	60.7	33.31
Cooling	36.21	21.51
Auxiliary	21.51	16.33
Lighting	48.21	42.74
Hot water	51.35	48.46
Equipment*	117.33	117.33
TOTAL**	**217.97**	**162.35**

* 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	0	0
Wind turbines	0	0
CHP generators	0	0
Solar thermal systems	0	0

Energy & CO_2 Emissions Summary

	Actual	Notional
Heating + cooling demand [MJ/m^2]	459.36	404.56
Primary energy* [kWh/m^2]	461.89	340.95
Total emissions [kg/m^2]	79.2	58.4

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

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] No Heating or Cooling										
	Actual	209.5	0.6	0	0	0	0	0	0	0
	Notional	118.5	3	0	0	0	0	0	----	----
[ST] Split or multi-split system, [HS] LTHW boiler, [HFT] Natural Gas, [CFT] Electricity										
	Actual	221.2	311.2	78.5	46.8	27.8	0.78	1.85	0.84	2.6
	Notional	127	360.5	43.1	27.8	21.1	0.82	3.6	----	----

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

Key Features

The Building Control Body is advised to give particular attention to items whose specifications are better than typically expected.

Building fabric

Element	$U_{i\text{-}Typ}$	$U_{i\text{-}Min}$	Surface where the minimum value occurs*
Wall	0.23	0.55	"Block 1 - CIRCULATION 1_P_8"
Floor	0.2	0.25	"Block 1 - CIRCULATION 1_S_3"
Roof	0.15	0.18	"Block 1 - CIRCULATION 1_R_5"
Windows, roof windows, and rooflights	1.5	1.8	"Block 2 - BAR & SERVERY_G_11"
Personnel doors	1.5	3	"Block 2 - RESTAURANT_D_15"
Vehicle access & similar large doors	1.5	-	"No external vehicle access doors"
High usage entrance doors	1.5	-	"No external high usage entrance doors"

$U_{i\text{-}Typ}$ = Typical individual element U-values [W/(m²K)] $U_{i\text{-}Min}$ = Minimum individual element U-values [W/(m²K)]

* There might be more than one surface where the minimum U-value occurs.

Air Permeability	Typical value	This building
m³/(h.m²) at 50 Pa	5	25