

Project name

15 Great James St

As designed

Date: Thu Feb 06 16:50:14 2020

Administrative information

Building Details

Address: 15 Great James St, London,

Owner Details

Name:

Telephone number: Phone

Address: , ,

Certification tool

Calculation engine: Apache

Calculation engine version: 7.0.12

Interface to calculation engine: IES Virtual Environment

Interface to calculation engine version: 7.0.12

BRUKL compliance check version: v5.6.a.1

Certifier details

Name: Mr George Kent

Telephone number: 07792 670 919

Address: 9 Fitzjohns Road, Lewes, BN7 1PP

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	18.6
Target CO ₂ emission rate (TER), kgCO ₂ /m ² .annum	18.6
Building CO ₂ emission rate (BER), kgCO ₂ /m ² .annum	15.9
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	0.77	1.6	00000001:Surf[3]
Floor	0.25	0.37	0.58	00000001:Surf[0]
Roof	0.25	0.15	0.15	00000000:Surf[4]
Windows***, roof windows, and rooflights	2.2	2.88	5.56	00000007:Surf[0]
Personnel doors	2.2	1.5	1.5	00000002:Surf[0]
Vehicle access & similar large doors	1.5	-	-	No Vehicle access doors in building
High usage entrance doors	3.5	-	-	No High usage entrance doors in building
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	10

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- Split System

	Heating efficiency	Cooling efficiency	Radiant efficiency	SFP [W/(l/s)]	HR efficiency
This system	4.34	4.15	0	0	-
Standard value	2.5*	3.2	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. For types <=12 kW output, refer to EN 14825 for limiting standards.

2- Split System w AHU & HR

	Heating efficiency	Cooling efficiency	Radiant efficiency	SFP [W/(l/s)]	HR efficiency
This system	4.34	4.15	0	0	-
Standard value	2.5*	3.2	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. For types <=12 kW output, refer to EN 14825 for limiting standards.

1- Hot water

	Water heating efficiency	Storage loss factor [kWh/litre per day]
This building	1	-
Standard value	1	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	
	A	B	C	D	E	F	G	H	I	Zone	Standard	
ID of system type												
Standard value	0.3	1.1	0.5	1.9	1.6	0.5	1.1	0.5	1			
G.11 Subscription Desks	-	0.4	0	-	-	-	-	-	-	-	N/A	
G.04 Meeting Room	-	0.4	0	-	-	-	-	-	-	-	N/A	
G.03 Meeting Room	-	0.4	0	-	-	-	-	-	-	-	N/A	
1.04 WC	-	-	0.4	-	-	-	-	-	-	-	N/A	
2.04 WC	-	-	0.4	-	-	-	-	-	-	-	N/A	
3.02 Office	-	0.4	0	-	-	-	-	-	-	-	N/A	
3.04 WC	-	-	0.4	-	-	-	-	-	-	-	N/A	
B.14 Subscription Desks	-	0.4	0	-	-	-	-	-	-	-	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
	Standard value	0.3	1.1	0.5	1.9	1.6	0.5	1.1	0.5	1		
B.02 WC		-	-	0.4	-	-	-	-	-	-	-	N/A

General lighting and display lighting		Luminous efficacy [lm/W]			General lighting [W]
Zone name		Luminaire	Lamp	Display lamp	
	Standard value	60	60	22	
G.02 Meeting Room		90	-	-	204
G.11 Subscription Desks		90	-	-	429
G.04 Meeting Room		90	-	-	144
G.01 Entrance		-	90	-	63
G.03 Meeting Room		90	-	-	192
1.07 Meeting Room		90	-	-	90
1.01 Office		90	-	-	248
1.05 Stair		-	90	-	31
1.04 WC		-	90	-	35
2.07 Meeting Room		90	-	-	81
2.01 Office		90	-	-	239
2.05 Stair		-	90	-	28
2.04 WC		-	90	-	32
3.07 Meeting Room		90	-	-	90
3.03 Office		90	-	-	134
3.01 Office		90	-	-	248
3.02 Office		90	-	-	206
3.05 Stair		-	90	-	30
3.04 WC		-	90	-	35
1.02 Office		90	-	-	300
2.02 Office		90	-	-	289
B.01 Meeting Room		90	-	-	236
B.14 Subscription Desks		90	-	-	577
B.08 Stairs		-	90	-	36
B.02 WC		-	90	-	83

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?
G.02 Meeting Room	NO (-38.8%)	YES
G.11 Subscription Desks	NO (-52.8%)	YES
G.04 Meeting Room	N/A	N/A
G.03 Meeting Room	N/A	N/A
1.07 Meeting Room	NO (-72.1%)	YES
1.01 Office	NO (-42.8%)	YES
1.04 WC	N/A	N/A
2.07 Meeting Room	NO (-72.1%)	YES
2.01 Office	NO (-42.8%)	YES

Zone	Solar gain limit exceeded? (%)	Internal blinds used?
2.04 WC	N/A	N/A
3.07 Meeting Room	NO (-72.1%)	YES
3.03 Office	NO (-54.1%)	YES
3.01 Office	NO (-42.8%)	YES
3.02 Office	N/A	N/A
3.04 WC	N/A	N/A
1.02 Office	NO (-71.7%)	YES
2.02 Office	NO (-55.9%)	YES
B.01 Meeting Room	NO (-88.9%)	YES
B.14 Subscription Desks	NO (-99.2%)	NO
B.02 WC	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]	567	567
External area [m ²]	659.4	659.4
Weather	LON	LON
Infiltration [m ³ /hm ² @ 50Pa]	10	3
Average conductance [W/K]	494.99	331.4
Average U-value [W/m ² K]	0.75	0.5
Alpha value* [%]	10.97	10

* 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
100	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/m²]

	Actual	Notional
Heating	11.32	5.51
Cooling	1.46	5.29
Auxiliary	1.07	1.75
Lighting	14.46	22.57
Hot water	2.39	2.62
Equipment*	36.49	36.49
TOTAL**	30.7	37.74

* 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	0	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]	180.37	104.86
Primary energy* [kWh/m ²]	129.02	124.49
Total emissions [kg/m ²]	15.9	18.6

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

HVAC Systems Performance

System Type	Heat dem MJ/m ²	Cool dem MJ/m ²	Heat con kWh/m ²	Cool con kWh/m ²	Aux con kWh/m ²	Heat SSEFF	Cool SSEER	Heat gen SEFF	Cool gen SEER
[ST] Split or multi-split system, [HS] Heat pump (electric): air source, [HFT] Electricity, [CFT] Electricity									
Actual	234.6	13.1	16.1	1.2	1.3	4.04	2.95	4.34	4.15
Notional	60.9	67.1	6.6	6.6	1.9	2.56	2.84	----	----
[ST] Split or multi-split system, [HS] Heat pump (electric): air source, [HFT] Electricity, [CFT] Electricity									
Actual	68.4	28.9	4.7	2.7	1	4.04	2.95	4.34	4.15
Notional	49.4	47.3	5.4	4.6	2.1	2.56	2.84	----	----
[ST] No Heating or Cooling									
Actual	0	0	0	0	0	0	0	0	0
Notional	0	0	0	0	0	0	0	----	----

Key to terms

Heat dem [MJ/m ²]	= Heating energy demand
Cool dem [MJ/m ²]	= Cooling energy demand
Heat con [kWh/m ²]	= Heating energy consumption
Cool con [kWh/m ²]	= Cooling energy consumption
Aux con [kWh/m ²]	= 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-Typ}	U _{i-Min}	Surface where the minimum value occurs*
Wall	0.23	0.23	00000000:Surf[6]
Floor	0.2	0.2	01000001:Surf[0]
Roof	0.15	0.15	00000000:Surf[4]
Windows, roof windows, and rooflights	1.5	1.2	00000000:Surf[1]
Personnel doors	1.5	1.5	00000002:Surf[0]
Vehicle access & similar large doors	1.5	-	No Vehicle access doors in building
High usage entrance doors	1.5	-	No High usage entrance doors in building
U _{i-Typ} = Typical individual element U-values [W/(m ² K)]		U _{i-Min} = Minimum individual element U-values [W/(m ² K)]	
* There might be more than one surface where the minimum U-value occurs.			

Air Permeability	Typical value	This building
m ³ /(h.m ²) at 50 Pa	5	10