

## Project name

**Residential Amenity - Circulation only - Green**

As designed

Date: Thu Nov 21 15:06:30 2019

## Administrative information

## Building Details

Address: Residential Amenity, London,

## Owner Details

Name:

Telephone number:

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: Hoare Lea LLP

Telephone number: Phone

Address: 12-13 Stable Street, Kings Cross, London, N1C 4AB

Criterion 1: The calculated CO<sub>2</sub> emission rate for the building must not exceed the target

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

CO <sub>2</sub> emission rate from the notional building, kgCO <sub>2</sub> /m <sup>2</sup> .annum	7.5
Target CO <sub>2</sub> emission rate (TER), kgCO <sub>2</sub> /m <sup>2</sup> .annum	7.5
Building CO <sub>2</sub> emission rate (BER), kgCO <sub>2</sub> /m <sup>2</sup> .annum	7.7
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 <sub>a</sub> -Limit	U <sub>a</sub> -Calc	U <sub>i</sub> -Calc	Surface where the maximum value occurs*
Wall**	0.35	0.22	0.22	LG000011:Surf[2]
Floor	0.25	0.2	0.2	LG000009:Surf[0]
Roof	0.25	-	-	UNKNOWN
Windows***, roof windows, and rooflights	2.2	-	-	No windows or rooflights in building
Personnel doors	2.2	1.6	1.6	LG000011:Surf[1]
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 <sub>a</sub> -Limit = Limiting area-weighted average U-values [W/(m <sup>2</sup> K)] U <sub>a</sub> -Calc = Calculated area-weighted average U-values [W/(m <sup>2</sup> K)] U <sub>i</sub> -Calc = Calculated maximum individual element U-values [W/(m <sup>2</sup> 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 <sup>3</sup> /(h.m <sup>2</sup> ) at 50 Pa	10	3

## 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	YES
Whole building electric power factor achieved by power factor correction	<0.9

### 1- Amenity VRF

	Heating efficiency	Cooling efficiency	Radiant efficiency	SFP [W/(l/s)]	HR efficiency
<b>This system</b>	3.5	4	0	0	0.81
<b>Standard value</b>	2.5*	3.2	N/A	N/A	0.5
<b>Automatic monitoring &amp; targeting with alarms for out-of-range values for this HVAC system</b>					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.					

"No HWS in project, or hot water is provided by HVAC system"

### 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	Zone	Standard
	<b>Standard value</b>	0.3	1.1	0.5	1.9	1.6	0.5	1.1	0.5	1		
LG - Corridor		-	-	-	1.6	-	-	-	-	-	-	N/A
LG - Corridor		-	-	-	1.6	-	-	-	-	-	-	N/A
LG - Stair		-	-	-	1.6	-	-	-	-	-	-	N/A

### General lighting and display lighting

Zone name	Luminous efficacy [lm/W]			General lighting [W]
	Luminaire	Lamp	Display lamp	
	<b>Standard value</b>	60	60	22
LG - Corridor	-	77	-	231
LG - Corridor	-	78	-	199
LG - Stair	-	90	-	49

**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?
LG - Corridor	N/A	N/A
LG - Corridor	NO (-86.2%)	NO
LG - Stair	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**

<b>Were alternative energy systems considered and analysed as part of the design process?</b>	<b>NO</b>
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 <sup>2</sup> ]	159.7	159.7
External area [m <sup>2</sup> ]	168.3	168.3
Weather	LON	LON
Infiltration [m <sup>3</sup> /hm <sup>2</sup> @ 50Pa]	3	5
Average conductance [W/K]	43.18	0
Average U-value [W/m <sup>2</sup> K]	0.26	0
Alpha value* [%]	10	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  
 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

### 100 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<sup>2</sup>]

	Actual	Notional
Heating	0.71	2.48
Cooling	0.78	0.25
Auxiliary	1.61	0.53
Lighting	11.74	11.6
Hot water	0	0
Equipment*	13.13	13.13
<b>TOTAL**</b>	<b>14.84</b>	<b>14.86</b>

\* 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<sup>2</sup>]

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

## Energy & CO<sub>2</sub> Emissions Summary

	Actual	Notional
Heating + cooling demand [MJ/m <sup>2</sup> ]	17.38	26.19
Primary energy* [kWh/m <sup>2</sup> ]	47.76	51.92
Total emissions [kg/m <sup>2</sup> ]	7.7	7.5

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

## HVAC Systems Performance

System Type	Heat dem MJ/m <sup>2</sup>	Cool dem MJ/m <sup>2</sup>	Heat con kWh/m <sup>2</sup>	Cool con kWh/m <sup>2</sup>	Aux con kWh/m <sup>2</sup>	Heat SSEFF	Cool SSEER	Heat gen SEFF	Cool gen SEER
<b>[ST] Split or multi-split system, [HS] Heat pump (electric): air source, [HFT] Electricity, [CFT] Electricity</b>									
<b>Actual</b>	8.4	9	0.7	0.8	1.6	3.26	3.2	3.5	4.5
<b>Notional</b>	22.8	3.3	2.5	0.2	0.5	2.56	3.79	----	----
<b>[ST] No Heating or Cooling</b>									
<b>Actual</b>	0	0	0	0	0	0	0	0	0
<b>Notional</b>	0	0	0	0	0	0	0	----	----

### Key to terms

Heat dem [MJ/m <sup>2</sup> ]	= Heating energy demand
Cool dem [MJ/m <sup>2</sup> ]	= Cooling energy demand
Heat con [kWh/m <sup>2</sup> ]	= Heating energy consumption
Cool con [kWh/m <sup>2</sup> ]	= Cooling energy consumption
Aux con [kWh/m <sup>2</sup> ]	= 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 <sub>i-Typ</sub>	U <sub>i-Min</sub>	Surface where the minimum value occurs*
Wall	0.23	0.22	LG000011:Surf[2]
Floor	0.2	0.2	LG000009:Surf[0]
Roof	0.15	-	UNKNOWN
Windows, roof windows, and rooflights	1.5	-	No windows or rooflights in building
Personnel doors	1.5	1.6	LG000011:Surf[1]
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 <sub>i-Typ</sub> = Typical individual element U-values [W/(m <sup>2</sup> K)]		U <sub>i-Min</sub> = Minimum individual element U-values [W/(m <sup>2</sup> K)]	
* There might be more than one surface where the minimum U-value occurs.			

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