

## Project name

**Project 2020\_Extension\_Be Lean**

As designed

Date: Mon Mar 05 10:42:49 2018

## Administrative information

## Building Details

Address: 17 Charterhouse STREET, London, EC1N 6RA

## Certification tool

Calculation engine: Apache

Calculation engine version: 7.0.8

Interface to calculation engine: IES Virtual Environment

Interface to calculation engine version: 7.0.8

BRUKL compliance check version: v5.3.a.0

## Owner Details

Name: Name

Telephone number: Phone

Address: Street Address, City, Postcode

## Certifier details

Name: Name

Telephone number: Phone

Address: Street Address, City, Postcode

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

CO <sub>2</sub> emission rate from the notional building, kgCO <sub>2</sub> /m <sup>2</sup> .annum	24.4
Target CO <sub>2</sub> emission rate (TER), kgCO <sub>2</sub> /m <sup>2</sup> .annum	24.4
Building CO <sub>2</sub> emission rate (BER), kgCO <sub>2</sub> /m <sup>2</sup> .annum	23.2
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 <sub>a</sub> -Limit	U <sub>a</sub> -Calc	U <sub>i</sub> -Calc	Surface where the maximum value occurs*
Wall**	0.35	0.2	0.2	01000055:Surf[3]
Floor	0.25	0.22	0.22	06000019:Surf[0]
Roof	0.25	0.16	0.16	VD000001:Surf[4]
Windows***, roof windows, and rooflights	2.2	1.38	1.4	01000055:Surf[0]
Personnel doors	2.2	1.4	1.4	05000003: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 <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	5

## 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	>0.95

### 1- HVAC-1

	Heating efficiency	Cooling efficiency	Radiant efficiency	SFP [W/(l/s)]	HR efficiency
<b>This system</b>	0.91	2.93	0	1.9	0.81
<b>Standard value</b>	0.91*	3.2	N/A	1.6^	N/A
<b>Automatic monitoring &amp; targeting with alarms for out-of-range values for this HVAC system</b>					YES
* 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.					
^ Allowed SFP may be increased by the amounts specified in the Non-Domestic Building Services Compliance Guide if the system includes additional components as listed in the Guide.					

### 1- DHW-1

	Water heating efficiency	Storage loss factor [kWh/litre per day]
<b>This building</b>	0.81	-
<b>Standard value</b>	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	
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		
1st012 _Open Plan Office	-	-	-	-	-	-	-	0.2	-	-	N/A
1st015 _Open Plan Office	-	-	-	-	-	-	-	0.2	-	-	N/A
1st016 _Open Plan Office	-	-	-	-	-	-	-	0.2	-	-	N/A
1st018 _Open Plan Office	-	-	-	-	-	-	-	0.2	-	-	N/A
1st019 _Open Plan Office	-	-	-	-	-	-	-	0.2	-	-	N/A
1st026 _Open Plan Office P	-	-	-	-	-	-	-	0.2	-	-	N/A
1st028 _Open Plan Office P	-	-	-	-	-	-	-	0.2	-	-	N/A
1st030 _Open Plan Office P	-	-	-	-	-	-	-	0.2	-	-	N/A
1st031 _Open Plan Office P	-	-	-	-	-	-	-	0.2	-	-	N/A
1st032 _Open Plan Office P	-	-	-	-	-	-	-	0.2	-	-	N/A
1st034 _Open Plan Office P	-	-	-	-	-	-	-	0.2	-	-	N/A
1st037 _Open Plan Office P	-	-	-	-	-	-	-	0.2	-	-	N/A
1st042 _Open Plan Office P	-	-	-	-	-	-	-	0.2	-	-	N/A

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	
1st044 _Open Plan Office P	-	-	-	-	-	-	-	0.2	-	-	N/A	
1st047 _Open Plan Office P	-	-	-	-	-	-	-	0.2	-	-	N/A	
1st048 _Open Plan Office P	-	-	-	-	-	-	-	0.2	-	-	N/A	
1st049 _Open Plan Office P	-	-	-	-	-	-	-	0.2	-	-	N/A	
1st056 _Open Plan Office P	-	-	-	-	-	-	-	0.2	-	-	N/A	
1st057 _Open Plan Office P	-	-	-	-	-	-	-	0.2	-	-	N/A	
1st058 _Open Plan Office P	-	-	-	-	-	-	-	0.2	-	-	N/A	
1st059 _Open Plan Office P	-	-	-	-	-	-	-	0.2	-	-	N/A	
1st060 _Open Plan Office P	-	-	-	-	-	-	-	0.2	-	-	N/A	
1st061 _Open Plan Office P	-	-	-	-	-	-	-	0.2	-	-	N/A	
1st062 _Open Plan Office P	-	-	-	-	-	-	-	0.2	-	-	N/A	
1st063 _Open Plan Office P	-	-	-	-	-	-	-	0.2	-	-	N/A	
1st067 _Open Plan Office P	-	-	-	-	-	-	-	0.2	-	-	N/A	
1st108 _Open Plan Office	-	-	-	-	-	-	-	0.2	-	-	N/A	
1st110 _Open Plan Office	-	-	-	-	-	-	-	0.2	-	-	N/A	
1st110 _Open Plan Office	-	-	-	-	-	-	-	0.2	-	-	N/A	
2nd016 _Open Plan Office	-	-	-	-	-	-	-	0.2	-	-	N/A	
2nd022 _Open Plan Office	-	-	-	-	-	-	-	0.2	-	-	N/A	
2nd023 _Open Plan Office	-	-	-	-	-	-	-	0.2	-	-	N/A	
2nd027 _Open Plan Office	-	-	-	-	-	-	-	0.2	-	-	N/A	
2nd028 _Open Plan Office	-	-	-	-	-	-	-	0.2	-	-	N/A	
2nd039 _Open Plan Office	-	-	-	-	-	-	-	0.2	-	-	N/A	
2nd047 _Open Plan Office P	-	-	-	-	-	-	-	0.2	-	-	N/A	
2nd049 _Open Plan Office P	-	-	-	-	-	-	-	0.2	-	-	N/A	
2nd060 _Open Plan Office P	-	-	-	-	-	-	-	0.2	-	-	N/A	
2nd062 _Open Plan Office P	-	-	-	-	-	-	-	0.2	-	-	N/A	
2nd063 _Open Plan Office P	-	-	-	-	-	-	-	0.2	-	-	N/A	
2nd064 _Open Plan Office P	-	-	-	-	-	-	-	0.2	-	-	N/A	
2nd065 _Open Plan Office P	-	-	-	-	-	-	-	0.2	-	-	N/A	
2nd067 _Open Plan Office P	-	-	-	-	-	-	-	0.2	-	-	N/A	
2nd068 _Open Plan Office P	-	-	-	-	-	-	-	0.2	-	-	N/A	
2nd069 _Open Plan Office P	-	-	-	-	-	-	-	0.2	-	-	N/A	
2nd070 _Open Plan Office P	-	-	-	-	-	-	-	0.2	-	-	N/A	
2nd071 _Open Plan Office P	-	-	-	-	-	-	-	0.2	-	-	N/A	
2nd072 _Open Plan Office P	-	-	-	-	-	-	-	0.2	-	-	N/A	
2nd078 _Open Plan Office P	-	-	-	-	-	-	-	0.2	-	-	N/A	
2nd079 _Open Plan Office P	-	-	-	-	-	-	-	0.2	-	-	N/A	
2nd088 _Open Plan Office P	-	-	-	-	-	-	-	0.2	-	-	N/A	
3d019 _Open Plan Office	-	-	-	-	-	-	-	0.2	-	-	N/A	
3d029 _Open Plan Office	-	-	-	-	-	-	-	0.2	-	-	N/A	
3d030 _Open Plan Office	-	-	-	-	-	-	-	0.2	-	-	N/A	
3d033 _Open Plan Office	-	-	-	-	-	-	-	0.2	-	-	N/A	
3d034 _Open Plan Office	-	-	-	-	-	-	-	0.2	-	-	N/A	

Zone name	SFP [W/(I/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		
3d037 _Open Plan Office	-	-	-	-	-	-	-	0.2	-	-	N/A
3d039 _Open Plan Office P	-	-	-	-	-	-	-	0.2	-	-	N/A
3d040 _Open Plan Office P	-	-	-	-	-	-	-	0.2	-	-	N/A
3d041 _Open Plan Office P	-	-	-	-	-	-	-	0.2	-	-	N/A
3d043 _Open Plan Office P	-	-	-	-	-	-	-	0.2	-	-	N/A
3d045 _Open Plan Office P	-	-	-	-	-	-	-	0.2	-	-	N/A
3d046 _Open Plan Office P	-	-	-	-	-	-	-	0.2	-	-	N/A
3d048 _Open Plan Office P	-	-	-	-	-	-	-	0.2	-	-	N/A
3d058 _Open Plan Office P	-	-	-	-	-	-	-	0.2	-	-	N/A
3d061 _Open Plan Office P	-	-	-	-	-	-	-	0.2	-	-	N/A
3d062 _Open Plan Office P	-	-	-	-	-	-	-	0.2	-	-	N/A
3d064 _Open Plan Office P	-	-	-	-	-	-	-	0.2	-	-	N/A
3d065 _Open Plan Office P	-	-	-	-	-	-	-	0.2	-	-	N/A
3d081 _Open Plan Office P	-	-	-	-	-	-	-	0.2	-	-	N/A
3d082 _Open Plan Office P	-	-	-	-	-	-	-	0.2	-	-	N/A
3d083 _Open Plan Office P	-	-	-	-	-	-	-	0.2	-	-	N/A
3d086 _Open Plan Office P	-	-	-	-	-	-	-	0.2	-	-	N/A
4th016 _Open Plan Office	-	-	-	-	-	-	-	0.2	-	-	N/A
4th019 _Open Plan Office	-	-	-	-	-	-	-	0.2	-	-	N/A
4th025 _Open Plan Office	-	-	-	-	-	-	-	0.2	-	-	N/A
4th030 _Open Plan Office	-	-	-	-	-	-	-	0.2	-	-	N/A
4th031 _Open Plan Office	-	-	-	-	-	-	-	0.2	-	-	N/A
4th033 _Open Plan Office	-	-	-	-	-	-	-	0.2	-	-	N/A
4th041 _Open Plan Office P	-	-	-	-	-	-	-	0.2	-	-	N/A
4th044 _Open Plan Office P	-	-	-	-	-	-	-	0.2	-	-	N/A
4th054 _Open Plan Office P	-	-	-	-	-	-	-	0.2	-	-	N/A
4th056 _Open Plan Office P	-	-	-	-	-	-	-	0.2	-	-	N/A
4th058 _Open Plan Office P	-	-	-	-	-	-	-	0.2	-	-	N/A
4th060 _Open Plan Office P	-	-	-	-	-	-	-	0.2	-	-	N/A
4th062 _Open Plan Office P	-	-	-	-	-	-	-	0.2	-	-	N/A
4th063 _Open Plan Office P	-	-	-	-	-	-	-	0.2	-	-	N/A
4th072 _Open Plan Office P	-	-	-	-	-	-	-	0.2	-	-	N/A
4th077 _Open Plan Office P	-	-	-	-	-	-	-	0.2	-	-	N/A
4th078 _Open Plan Office P	-	-	-	-	-	-	-	0.2	-	-	N/A
4th079 _Open Plan Office P	-	-	-	-	-	-	-	0.2	-	-	N/A
4th082 _Open Plan Office P	-	-	-	-	-	-	-	0.2	-	-	N/A
4th083 _Open Plan Office P	-	-	-	-	-	-	-	0.2	-	-	N/A
4th084 _Open Plan Office P	-	-	-	-	-	-	-	0.2	-	-	N/A
4th089 _Open Plan Office P	-	-	-	-	-	-	-	0.2	-	-	N/A
5th014 _Open Plan Office	-	-	-	-	-	-	-	0.2	-	-	N/A
5th014 _Open Plan Office	-	-	-	-	-	-	-	0.2	-	-	N/A
5th018 _Open Plan Office	-	-	-	-	-	-	-	0.2	-	-	N/A
5th020 _Open Plan Office	-	-	-	-	-	-	-	0.2	-	-	N/A

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	
5th030 _Open Plan Office P	-	-	-	-	-	-	-	0.2	-	-	N/A	
5th033 _Open Plan Office P	-	-	-	-	-	-	-	0.2	-	-	N/A	
5th034 _Open Plan Office P	-	-	-	-	-	-	-	0.2	-	-	N/A	
5th035 _Open Plan Office P	-	-	-	-	-	-	-	0.2	-	-	N/A	
5th038 _Open Plan Office P	-	-	-	-	-	-	-	0.2	-	-	N/A	
5th041 _Open Plan Office P	-	-	-	-	-	-	-	0.2	-	-	N/A	
5th042 _Open Plan Office P	-	-	-	-	-	-	-	0.2	-	-	N/A	
5th043 _Open Plan Office P	-	-	-	-	-	-	-	0.2	-	-	N/A	
5th044 _Open Plan Office P	-	-	-	-	-	-	-	0.2	-	-	N/A	
5th045 _Open Plan Office P	-	-	-	-	-	-	-	0.2	-	-	N/A	
5th048 _Open Plan Office P	-	-	-	-	-	-	-	0.2	-	-	N/A	
5th052 _Open Plan Office P	-	-	-	-	-	-	-	0.2	-	-	N/A	
5th053 _Open Plan Office P	-	-	-	-	-	-	-	0.2	-	-	N/A	
5th054 _Open Plan Office P	-	-	-	-	-	-	-	0.2	-	-	N/A	
5th055 _Open Plan Office P	-	-	-	-	-	-	-	0.2	-	-	N/A	
5th061 _Open Plan Office P	-	-	-	-	-	-	-	0.2	-	-	N/A	
5th062 _Open Plan Office P	-	-	-	-	-	-	-	0.2	-	-	N/A	
6th009 _Open Plan Office	-	-	-	-	-	-	-	0.2	-	-	N/A	
6th010 _Open Plan Office P	-	-	-	-	-	-	-	0.2	-	-	N/A	
6th015 _Open Plan Office P	-	-	-	-	-	-	-	0.2	-	-	N/A	
6th017 _Open Plan Office P	-	-	-	-	-	-	-	0.2	-	-	N/A	
6th020 _Open Plan Office P	-	-	-	-	-	-	-	0.2	-	-	N/A	
6th021 _Open Plan Office P	-	-	-	-	-	-	-	0.2	-	-	N/A	
6th022 _Open Plan Office P	-	-	-	-	-	-	-	0.2	-	-	N/A	
6th026 _Open Plan Office P	-	-	-	-	-	-	-	0.2	-	-	N/A	
6th037 _WC	-	-	-	-	-	-	-	1	-	-	N/A	
6th038 _WC	-	-	-	-	-	-	-	1	-	-	N/A	
GF029 _ReceptionP	-	-	-	-	-	-	-	0.2	-	-	N/A	
GF031 _Restaurant	-	-	-	-	-	-	-	0.2	-	-	N/A	
GF032 _Restaurant	-	-	-	-	-	-	-	0.2	-	-	N/A	
GF035 _Restaurant P	-	-	-	-	-	-	-	0.2	-	-	N/A	
GF036 _Restaurant P	-	-	-	-	-	-	-	0.2	-	-	N/A	
GF037 _Restaurant P	-	-	-	-	-	-	-	0.2	-	-	N/A	
GF040 _Restaurant P	-	-	-	-	-	-	-	0.2	-	-	N/A	
GF041 _Restaurant P	-	-	-	-	-	-	-	0.2	-	-	N/A	
GF042 _Restaurant P	-	-	-	-	-	-	-	0.2	-	-	N/A	
GF062 _Servery	-	-	-	-	-	-	-	1.4	-	-	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	
1st005 _Circulation		-	100	-	51
1st012 _Open Plan Office		100	-	-	40

General lighting and display lighting		Luminous efficacy [lm/W]			General lighting [W]
Zone name		Luminaire	Lamp	Display lamp	
	Standard value	60	60	22	
1st015 _Open Plan Office		100	-	-	94
1st016 _Open Plan Office		100	-	-	73
1st018 _Open Plan Office		100	-	-	94
1st019 _Open Plan Office		100	-	-	92
1st026 _Open Plan Office P		100	-	-	94
1st028 _Open Plan Office P		100	-	-	70
1st030 _Open Plan Office P		100	-	-	147
1st031 _Open Plan Office P		100	-	-	37
1st032 _Open Plan Office P		100	-	-	142
1st034 _Open Plan Office P		100	-	-	24
1st037 _Open Plan Office P		100	-	-	95
1st042 _Open Plan Office P		100	-	-	21
1st044 _Open Plan Office P		100	-	-	99
1st047 _Open Plan Office P		100	-	-	110
1st048 _Open Plan Office P		100	-	-	24
1st049 _Open Plan Office P		100	-	-	108
1st056 _Open Plan Office P		100	-	-	63
1st057 _Open Plan Office P		100	-	-	16
1st058 _Open Plan Office P		100	-	-	16
1st059 _Open Plan Office P		100	-	-	20
1st060 _Open Plan Office P		100	-	-	21
1st061 _Open Plan Office P		100	-	-	41
1st062 _Open Plan Office P		100	-	-	22
1st063 _Open Plan Office P		100	-	-	24
1st067 _Open Plan Office P		100	-	-	76
1st108 _Open Plan Office		100	-	-	102
1st110 _Open Plan Office		100	-	-	18
1st110 _Open Plan Office		100	-	-	646
2nd006 _Circulation		-	100	-	51
2nd016 _Open Plan Office		100	-	-	659
2nd022 _Open Plan Office		100	-	-	99
2nd023 _Open Plan Office		100	-	-	94
2nd027 _Open Plan Office		100	-	-	40
2nd028 _Open Plan Office		100	-	-	112
2nd039 _Open Plan Office		100	-	-	94
2nd047 _Open Plan Office P		100	-	-	142
2nd049 _Open Plan Office P		100	-	-	147
2nd060 _Open Plan Office P		100	-	-	18
2nd062 _Open Plan Office P		100	-	-	113
2nd063 _Open Plan Office P		100	-	-	98
2nd064 _Open Plan Office P		100	-	-	37
2nd065 _Open Plan Office P		100	-	-	112
2nd067 _Open Plan Office P		100	-	-	98

General lighting and display lighting		Luminous efficacy [lm/W]			General lighting [W]
Zone name		Luminaire	Lamp	Display lamp	
	Standard value	60	60	22	
2nd068 _Open Plan Office P		100	-	-	41
2nd069 _Open Plan Office P		100	-	-	117
2nd070 _Open Plan Office P		100	-	-	93
2nd071 _Open Plan Office P		100	-	-	116
2nd072 _Open Plan Office P		100	-	-	116
2nd078 _Open Plan Office P		100	-	-	112
2nd079 _Open Plan Office P		100	-	-	118
2nd088 _Open Plan Office P		100	-	-	98
3d006 _Circulation		-	100	-	48
3d019 _Open Plan Office		100	-	-	40
3d029 _Open Plan Office		100	-	-	94
3d030 _Open Plan Office		100	-	-	94
3d033 _Open Plan Office		100	-	-	99
3d034 _Open Plan Office		100	-	-	659
3d037 _Open Plan Office		100	-	-	112
3d039 _Open Plan Office P		100	-	-	147
3d040 _Open Plan Office P		100	-	-	98
3d041 _Open Plan Office P		100	-	-	98
3d043 _Open Plan Office P		100	-	-	113
3d045 _Open Plan Office P		100	-	-	41
3d046 _Open Plan Office P		100	-	-	98
3d048 _Open Plan Office P		100	-	-	37
3d058 _Open Plan Office P		100	-	-	142
3d061 _Open Plan Office P		100	-	-	112
3d062 _Open Plan Office P		100	-	-	117
3d064 _Open Plan Office P		100	-	-	18
3d065 _Open Plan Office P		100	-	-	93
3d081 _Open Plan Office P		100	-	-	116
3d082 _Open Plan Office P		100	-	-	112
3d083 _Open Plan Office P		100	-	-	116
3d086 _Open Plan Office P		100	-	-	118
4th005 _Circulation		-	100	-	48
4th016 _Open Plan Office		100	-	-	659
4th019 _Open Plan Office		100	-	-	94
4th025 _Open Plan Office		100	-	-	94
4th030 _Open Plan Office		100	-	-	99
4th031 _Open Plan Office		100	-	-	112
4th033 _Open Plan Office		100	-	-	40
4th041 _Open Plan Office P		100	-	-	117
4th044 _Open Plan Office P		100	-	-	113
4th054 _Open Plan Office P		100	-	-	18
4th056 _Open Plan Office P		100	-	-	116
4th058 _Open Plan Office P		100	-	-	147

General lighting and display lighting		Luminous efficacy [lm/W]			General lighting [W]
Zone name		Luminaire	Lamp	Display lamp	
	Standard value	60	60	22	
4th060 _Open Plan Office P		100	-	-	100
4th062 _Open Plan Office P		100	-	-	112
4th063 _Open Plan Office P		100	-	-	37
4th072 _Open Plan Office P		100	-	-	99
4th077 _Open Plan Office P		100	-	-	116
4th078 _Open Plan Office P		100	-	-	93
4th079 _Open Plan Office P		100	-	-	112
4th082 _Open Plan Office P		100	-	-	142
4th083 _Open Plan Office P		100	-	-	98
4th084 _Open Plan Office P		100	-	-	118
4th089 _Open Plan Office P		100	-	-	41
5th003 _Circulation		-	100	-	51
5th014 _Open Plan Office		100	-	-	183
5th014 _Open Plan Office		100	-	-	24
5th018 _Open Plan Office		100	-	-	141
5th020 _Open Plan Office		100	-	-	99
5th030 _Open Plan Office P		100	-	-	114
5th033 _Open Plan Office P		100	-	-	98
5th034 _Open Plan Office P		100	-	-	93
5th035 _Open Plan Office P		100	-	-	123
5th038 _Open Plan Office P		100	-	-	114
5th041 _Open Plan Office P		100	-	-	113
5th042 _Open Plan Office P		100	-	-	196
5th043 _Open Plan Office P		100	-	-	118
5th044 _Open Plan Office P		100	-	-	137
5th045 _Open Plan Office P		100	-	-	189
5th048 _Open Plan Office P		100	-	-	112
5th052 _Open Plan Office P		100	-	-	87
5th053 _Open Plan Office P		100	-	-	118
5th054 _Open Plan Office P		100	-	-	116
5th055 _Open Plan Office P		100	-	-	116
5th061 _Open Plan Office P		100	-	-	82
5th062 _Open Plan Office P		100	-	-	17
6th000 _Circulation		-	100	-	21
6th004 _Cleaners Cupboard		100	-	-	4
6th009 _Open Plan Office		100	-	-	192
6th010 _Open Plan Office P		100	-	-	90
6th015 _Open Plan Office P		100	-	-	190
6th017 _Open Plan Office P		100	-	-	201
6th020 _Open Plan Office P		100	-	-	57
6th021 _Open Plan Office P		100	-	-	85
6th022 _Open Plan Office P		100	-	-	188
6th026 _Open Plan Office P		100	-	-	239

General lighting and display lighting		Luminous efficacy [lm/W]			General lighting [W]
Zone name		Luminaire	Lamp	Display lamp	
	Standard value	60	60	22	
6th037 _WC		-	100	-	63
6th038 _WC		-	100	-	51
GF016 _Circulation		-	100	-	51
GF029 _ReceptionP		-	100	22	351
GF031 _Restaurant		-	100	-	538
GF032 _Restaurant		-	100	-	533
GF035 _Restaurant P		-	100	-	56
GF036 _Restaurant P		-	100	-	57
GF037 _Restaurant P		-	100	-	57
GF040 _Restaurant P		-	100	-	57
GF041 _Restaurant P		-	100	-	59
GF042 _Restaurant P		-	100	-	36
GF062 _Servery		-	100	-	231

### 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?
1st005 _Circulation	NO (-36.5%)	NO
1st012 _Open Plan Office	NO (-95.1%)	NO
1st015 _Open Plan Office	NO (-93.9%)	NO
1st016 _Open Plan Office	NO (-95.4%)	NO
1st018 _Open Plan Office	NO (-92.8%)	NO
1st019 _Open Plan Office	NO (-97.8%)	NO
1st026 _Open Plan Office P	NO (-77.1%)	NO
1st028 _Open Plan Office P	NO (-81.2%)	NO
1st030 _Open Plan Office P	N/A	N/A
1st031 _Open Plan Office P	N/A	N/A
1st032 _Open Plan Office P	N/A	N/A
1st034 _Open Plan Office P	NO (-47.8%)	NO
1st037 _Open Plan Office P	NO (-46.7%)	NO
1st042 _Open Plan Office P	NO (-52.3%)	NO
1st044 _Open Plan Office P	NO (-96.1%)	NO
1st047 _Open Plan Office P	NO (-62.7%)	NO
1st048 _Open Plan Office P	NO (-87.1%)	NO
1st049 _Open Plan Office P	NO (-82.5%)	NO
1st056 _Open Plan Office P	NO (-95.8%)	NO
1st057 _Open Plan Office P	NO (-50.6%)	NO
1st058 _Open Plan Office P	NO (-48.8%)	NO
1st059 _Open Plan Office P	NO (-49.7%)	NO
1st060 _Open Plan Office P	NO (-51%)	NO
1st061 _Open Plan Office P	NO (-81.5%)	NO
1st062 _Open Plan Office P	NO (-53.5%)	NO
1st063 _Open Plan Office P	NO (-54.5%)	NO
1st067 _Open Plan Office P	NO (-99.5%)	NO

Zone	Solar gain limit exceeded? (%)	Internal blinds used?
1st108 _Open Plan Office	NO (-87.3%)	NO
1st110 _Open Plan Office	N/A	N/A
1st110 _Open Plan Office	NO (-98.9%)	NO
2nd006 _Circulation	NO (-52.1%)	NO
2nd016 _Open Plan Office	NO (-98.7%)	NO
2nd022 _Open Plan Office	NO (-99.3%)	NO
2nd023 _Open Plan Office	NO (-90.7%)	NO
2nd027 _Open Plan Office	NO (-94%)	NO
2nd028 _Open Plan Office	NO (-95.4%)	NO
2nd039 _Open Plan Office	NO (-90.2%)	NO
2nd047 _Open Plan Office P	N/A	N/A
2nd049 _Open Plan Office P	N/A	N/A
2nd060 _Open Plan Office P	N/A	N/A
2nd062 _Open Plan Office P	NO (-53.7%)	NO
2nd063 _Open Plan Office P	NO (-75%)	NO
2nd064 _Open Plan Office P	N/A	N/A
2nd065 _Open Plan Office P	NO (-89.8%)	NO
2nd067 _Open Plan Office P	NO (-71.3%)	NO
2nd068 _Open Plan Office P	NO (-82.2%)	NO
2nd069 _Open Plan Office P	NO (-51.5%)	NO
2nd070 _Open Plan Office P	NO (-61.1%)	NO
2nd071 _Open Plan Office P	NO (-50.9%)	NO
2nd072 _Open Plan Office P	NO (-49.2%)	NO
2nd078 _Open Plan Office P	NO (-49.8%)	NO
2nd079 _Open Plan Office P	NO (-49.9%)	NO
2nd088 _Open Plan Office P	NO (-73.3%)	NO
3d006 _Circulation	NO (-37.4%)	NO
3d019 _Open Plan Office	NO (-91.9%)	NO
3d029 _Open Plan Office	NO (-87.5%)	NO
3d030 _Open Plan Office	NO (-86.9%)	NO
3d033 _Open Plan Office	NO (-99.1%)	NO
3d034 _Open Plan Office	NO (-98.1%)	NO
3d037 _Open Plan Office	NO (-93.6%)	NO
3d039 _Open Plan Office P	N/A	N/A
3d040 _Open Plan Office P	NO (-66.8%)	NO
3d041 _Open Plan Office P	NO (-59.6%)	NO
3d043 _Open Plan Office P	NO (-28.1%)	NO
3d045 _Open Plan Office P	NO (-76.4%)	NO
3d046 _Open Plan Office P	NO (-61.9%)	NO
3d048 _Open Plan Office P	N/A	N/A
3d058 _Open Plan Office P	N/A	N/A
3d061 _Open Plan Office P	NO (-85.5%)	NO
3d062 _Open Plan Office P	NO (-31.6%)	NO
3d064 _Open Plan Office P	N/A	N/A
3d065 _Open Plan Office P	NO (-36.8%)	NO
3d081 _Open Plan Office P	NO (-26.1%)	NO
3d082 _Open Plan Office P	NO (-27.4%)	NO
3d083 _Open Plan Office P	NO (-25.1%)	NO
3d086 _Open Plan Office P	NO (-29.2%)	NO

Zone	Solar gain limit exceeded? (%)	Internal blinds used?
4th005 _Circulation	NO (-40.9%)	NO
4th016 _Open Plan Office	NO (-98.4%)	NO
4th019 _Open Plan Office	NO (-89%)	NO
4th025 _Open Plan Office	NO (-89.5%)	NO
4th030 _Open Plan Office	NO (-99.1%)	NO
4th031 _Open Plan Office	NO (-94.5%)	NO
4th033 _Open Plan Office	NO (-93.4%)	NO
4th041 _Open Plan Office P	NO (-32.4%)	NO
4th044 _Open Plan Office P	NO (-30.4%)	NO
4th054 _Open Plan Office P	N/A	N/A
4th056 _Open Plan Office P	NO (-27.4%)	NO
4th058 _Open Plan Office P	N/A	N/A
4th060 _Open Plan Office P	NO (-68.2%)	NO
4th062 _Open Plan Office P	NO (-86.5%)	NO
4th063 _Open Plan Office P	N/A	N/A
4th072 _Open Plan Office P	NO (-64.2%)	NO
4th077 _Open Plan Office P	NO (-28.3%)	NO
4th078 _Open Plan Office P	NO (-34%)	NO
4th079 _Open Plan Office P	NO (-29.3%)	NO
4th082 _Open Plan Office P	N/A	N/A
4th083 _Open Plan Office P	NO (-56.1%)	NO
4th084 _Open Plan Office P	NO (-28.6%)	NO
4th089 _Open Plan Office P	NO (-78.8%)	NO
5th003 _Circulation	NO (-53.3%)	NO
5th014 _Open Plan Office	NO (-62.2%)	NO
5th014 _Open Plan Office	NO (-71.3%)	NO
5th018 _Open Plan Office	NO (-87.5%)	NO
5th020 _Open Plan Office	NO (-92.7%)	NO
5th030 _Open Plan Office P	NO (-53.6%)	NO
5th033 _Open Plan Office P	NO (-48.6%)	NO
5th034 _Open Plan Office P	NO (-31.8%)	NO
5th035 _Open Plan Office P	NO (-48.9%)	NO
5th038 _Open Plan Office P	NO (-35.9%)	NO
5th041 _Open Plan Office P	NO (-31%)	NO
5th042 _Open Plan Office P	NO (-55.6%)	NO
5th043 _Open Plan Office P	NO (-27.4%)	NO
5th044 _Open Plan Office P	NO (-92.9%)	NO
5th045 _Open Plan Office P	NO (-77.5%)	NO
5th048 _Open Plan Office P	NO (-28.3%)	NO
5th052 _Open Plan Office P	NO (-52.8%)	NO
5th053 _Open Plan Office P	NO (-25.5%)	NO
5th054 _Open Plan Office P	NO (-28.4%)	NO
5th055 _Open Plan Office P	NO (-29.3%)	NO
5th061 _Open Plan Office P	NO (-56.4%)	NO
5th062 _Open Plan Office P	NO (-98%)	NO
6th000 _Circulation	N/A	N/A
6th004 _Cleaners Cupboard	N/A	N/A
6th009 _Open Plan Office	NO (-57.6%)	NO
6th010 _Open Plan Office P	NO (-52.1%)	NO

Zone	Solar gain limit exceeded? (%)	Internal blinds used?
6th015 _Open Plan Office P	NO (-75.6%)	NO
6th017 _Open Plan Office P	NO (-55.6%)	NO
6th020 _Open Plan Office P	NO (-63.1%)	NO
6th021 _Open Plan Office P	NO (-53.3%)	NO
6th022 _Open Plan Office P	NO (-89.6%)	NO
6th026 _Open Plan Office P	NO (-38.6%)	NO
6th037 _WC	N/A	N/A
6th038 _WC	N/A	N/A
GF016 _Circulation	NO (-38.1%)	NO
GF029 _ReceptionP	NO (-43%)	NO
GF031 _Restaurant	YES (+298.7%)	NO
GF032 _Restaurant	NO (-90.5%)	NO
GF035 _Restaurant P	NO (-29.8%)	NO
GF036 _Restaurant P	NO (-36.5%)	NO
GF037 _Restaurant P	NO (-38.5%)	NO
GF040 _Restaurant P	NO (-25.5%)	NO
GF041 _Restaurant P	NO (-38.1%)	NO
GF042 _Restaurant P	NO (-78.1%)	NO
GF062 _Servery	NO (-66.5%)	NO

#### 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?	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
Area [m <sup>2</sup> ]	3378.9	3378.9
External area [m <sup>2</sup> ]	2622.3	2622.3
Weather	LON	LON
Infiltration [m <sup>3</sup> /hm <sup>2</sup> @ 50Pa]	5	3
Average conductance [W/K]	1840.08	0
Average U-value [W/m <sup>2</sup> K]	0.7	0
Alpha value* [%]	9.43	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	<b>B1 Offices and Workshop businesses</b>
	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<sup>2</sup>]

	Actual	Notional
Heating	13.06	5.52
Cooling	5.73	7.88
Auxiliary	14.75	12.49
Lighting	10.86	18.83
Hot water	17.51	14.43
Equipment*	42.56	42.56
<b>TOTAL **</b>	<b>61.92</b>	<b>59.15</b>

\* Energy used by equipment does not count towards the total for 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> ]	105.9	124.69
Primary energy* [kWh/m <sup>2</sup> ]	135.83	141.41
Total emissions [kg/m <sup>2</sup> ]	23.2	24.4

\* 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 SSEFF	Cool SSEER	Heat gen SEFF	Cool gen SEER	
[ST] Fan coil systems, [HS] LTHW boiler, [HFT] Natural Gas, [CFT] Electricity										
	Actual	40.4	65.5	13.1	5.7	14.5	0.86	3.18	0.91	4.05
	Notional	0	0	0	0	0	0	0	----	----
[ST] No Heating or Cooling										
	Actual	0	0	0	0	0	0	0	0	0
	Notional	17.1	107.6	5.5	7.9	12.5	0.86	3.79	----	----

### 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 <sub>i-Typ</sub>	U <sub>i-Min</sub>	Surface where the minimum value occurs*
Wall	0.23	0.2	01000055:Surf[3]
Floor	0.2	0.22	06000019:Surf[0]
Roof	0.15	0.16	VD000001:Surf[4]
Windows, roof windows, and rooflights	1.5	1.1	VD000001:Surf[2]
Personnel doors	1.5	1.4	05000003: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 <sub>i-Typ</sub> = Typical individual element U-values [W/(m²K)]		U <sub>i-Min</sub> = 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	5