BRUKL Output Document

HM Government

Compliance with England Building Regulations Part L 2013

Project name **Shell and Core**

1 Triton Square - New Extension - Planning Issue

As designed

Date: Wed Jan 04 10:21:27 2017

Administrative information

Building Details

Address: 1 Triton Square, London, NW1 3HF

Certification tool

Calculation engine: Apache

Calculation engine version: 7.0.6

Interface to calculation engine: IES Virtual Environment

Interface to calculation engine version: 7.0.6

BRUKL compliance check version: v5.2.g.3

Owner Details

Name:

Telephone number:

Address: , ,

Certifier details

Name:

Telephone number:

Address: , ,

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

CO_2 emission rate from the notional building, $kgCO_2/m^2.annum$	21.7
Target CO_2 emission rate (TER), $kgCO_2/m^2.annum$	21.7
Building CO_2 emission rate (BER), $kgCO_2/m^2.annum$	18.8
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 the building services should achieve reasonable overall standards of energy efficiency

Values not achieving 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	0.26	0.26	7C000000:Surf[0]
Floor	0.25	0.22	0.22	7F000001:Surf[0]
Roof	0.25	0.18	0.18	7C000003:Surf[0]
Windows***, roof windows, and rooflights	2.2	1.52	1.52	8F00000D:Surf[0]
Personnel doors	2.2	-	-	No Personnel doors in building
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

$U_{a\text{-}Limit}$ = 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	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	>0.95

1- FCU System - Office

	Heating efficiency	Cooling efficiency	Radiant efficiency	SFP [W/(l/s)]	HR efficiency
This system	0.91	4.9	0	1.8	0.7
Standard value	0.91*	2.7	N/A	1.6^	0.65
Automatic monitoring & targeting with alarms for out-of-range values for this HVAC system					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.

"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		
Standard value	0.3	1.1	0.5	1.9	1.6	0.5	1.1	0.5	1	Zone	Standard
8_Office_A_VZ2	-	-	-	-	-	-	-	0.3	-	-	N/A
8_Office_A_VZ3	-	-	-	-	-	-	-	0.3	-	-	N/A
8_Office_A_VZ4	-	-	-	-	-	-	-	0.3	-	-	N/A
8_Office_I_VZ1	-	-	-	-	-	-	-	0.3	-	-	N/A
8_Office_I_VZ3	-	-	-	-	-	-	-	0.3	-	-	N/A
8_Office_I_VZ4	-	-	-	-	-	-	-	0.3	-	-	N/A
8_Office_P_VZ1_East	-	-	-	-	-	-	-	0.3	-	-	N/A
8_Office_P_VZ1_SE	-	-	-	-	-	-	-	0.3	-	-	N/A
8_Office_P_VZ1_South	-	-	-	-	-	-	-	0.3	-	-	N/A
8_Office_P_VZ2_South	-	-	-	-	-	-	-	0.3	-	-	N/A
8_Office_P_VZ2_West	-	-	-	-	-	-	-	0.3	-	-	N/A
8_Office_P_VZ3_North	-	-	-	-	-	-	-	0.3	-	-	N/A
8_Office_P_VZ3_West	-	-	-	-	-	-	-	0.3	-	-	N/A
8_Office_P_VZ4_East	-	-	-	-	-	-	-	0.3	-	-	N/A
8_Office_P_VZ4_North	-	-	-	-	-	-	-	0.3	-	-	N/A
7_Office_A_VZ2	-	-	-	-	-	-	-	0.3	-	-	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
7_Office_A_VZ3	-	-	-	-	-	-	-	0.3	-	-	N/A
7_Office_A_VZ4	-	-	-	-	-	-	-	0.3	-	-	N/A
7_Office_I_VZ1	-	-	-	-	-	-	-	0.3	-	-	N/A
7_Office_I_VZ3	-	-	-	-	-	-	-	0.3	-	-	N/A
7_Office_I_VZ4	-	-	-	-	-	-	-	0.3	-	-	N/A
7_Office_P_VZ1_East	-	-	-	-	-	-	-	0.3	-	-	N/A
7_Office_P_VZ1_SE	-	-	-	-	-	-	-	0.3	-	-	N/A
7_Office_P_VZ1_South	-	-	-	-	-	-	-	0.3	-	-	N/A
7_Office_P_VZ2_South	-	-	-	-	-	-	-	0.3	-	-	N/A
7_Office_P_VZ2_West	-	-	-	-	-	-	-	0.3	-	-	N/A
7_Office_P_VZ3_North	-	-	-	-	-	-	-	0.3	-	-	N/A
7_Office_P_VZ3_West	-	-	-	-	-	-	-	0.3	-	-	N/A
7_Office_P_VZ4_East	-	-	-	-	-	-	-	0.3	-	-	N/A
7_Office_P_VZ4_North	-	-	-	-	-	-	-	0.3	-	-	N/A
6_Office_A_VZ2	-	-	-	-	-	-	-	0.3	-	-	N/A
6_Office_A_VZ3	-	-	-	-	-	-	-	0.3	-	-	N/A
6_Office_A_VZ4	-	-	-	-	-	-	-	0.3	-	-	N/A
6_Office_I_VZ1	-	-	-	-	-	-	-	0.3	-	-	N/A
6_Office_I_VZ3	-	-	-	-	-	-	-	0.3	-	-	N/A
6_Office_I_VZ4	-	-	-	-	-	-	-	0.3	-	-	N/A
6_Office_P_VZ1_East	-	-	-	-	-	-	-	0.3	-	-	N/A
6_Office_P_VZ1_SE	-	-	-	-	-	-	-	0.3	-	-	N/A
6_Office_P_VZ1_South	-	-	-	-	-	-	-	0.3	-	-	N/A
6_Office_P_VZ2_South	-	-	-	-	-	-	-	0.3	-	-	N/A
6_Office_P_VZ2_West	-	-	-	-	-	-	-	0.3	-	-	N/A
6_Office_P_VZ3_North	-	-	-	-	-	-	-	0.3	-	-	N/A
6_Office_P_VZ3_West	-	-	-	-	-	-	-	0.3	-	-	N/A
6_Office_P_VZ4_East	-	-	-	-	-	-	-	0.3	-	-	N/A
6_Office_P_VZ4_North	-	-	-	-	-	-	-	0.3	-	-	N/A
8_Office_I_VZ2	-	-	-	-	-	-	-	0.3	-	-	N/A
7_Office_I_VZ2	-	-	-	-	-	-	-	0.3	-	-	N/A
6_Office_I_VZ2	-	-	-	-	-	-	-	0.3	-	-	N/A

Shell and core configuration

Zone	Assumed shell?
8_Core 1A_Lift Lobby	NO
8_Core 1A_Stairs	NO
8_Core 1B_Acc WC_VZ1	NO
8_Core 1B_Cleaners Cupboard	NO
8_Core 1B_Female WC_VZ1	NO
8_Core 1B_Male WC_VZ1	NO
8_Core 1B_Stairs	NO
8_Core 1B_Storage	NO
8_Core 2_Cleaners Cupboard	NO
8_Core 2_DWC_VZ2	NO

Shell and core configuration

Zone	Assumed shell?
8_Core 2_Female WC_VZ2	NO
8_Core 2_Lobby	NO
8_Core 2_Lobby 1	NO
8_Core 2_Lobby 2	NO
8_Core 2_Male WC_VZ2	NO
8_Core 2_Stairs	NO
8_Core 2_Storage 1	NO
8_Core 2_Storage 2	NO
8_Core 3_Cleaners Cupboard 1	NO
8_Core 3_Cleaners Cupboard 2	NO
8_Core 3_DWC_VZ3	NO
8_Core 3_Female WC_VZ3	NO
8_Core 3_Lobby	NO
8_Core 3_Lobby 2	NO
8_Core 3_Lobby 3	NO
8_Core 3_Male WC_VZ3	NO
8_Core 3_Stairs	NO
8_Core 4_Cleaners Cupboard	NO
8_Core 4_DWC_VZ4	NO
8_Core 4_Female WC_VZ4	NO
8_Core 4_Lobby 2	NO
8_Core 4_Lobby 3	NO
8_Core 4_Male WC_VZ4	NO
8_Core 4_Stairs	NO
8_Core 4_Storage 1	NO
8_Core 4_Storage 2	NO
8_Office_A_VZ2	NO
8_Office_A_VZ3	NO
8_Office_A_VZ4	NO
8_Office_I_VZ1	NO
8_Office_I_VZ3	NO
8_Office_I_VZ4	NO
8_Office_P_VZ1_East	NO
8_Office_P_VZ1_SE	NO
8_Office_P_VZ1_South	NO
8_Office_P_VZ2_South	NO
8_Office_P_VZ2_West	NO
8_Office_P_VZ3_North	NO
8_Office_P_VZ3_West	NO
8_Office_P_VZ4_East	NO
8_Office_P_VZ4_North	NO
9_Core 1A_Stairs	NO
9_Core 1B_Male WC	NO
9_Core 1B_Stairs	NO
9_Core 1B_Storage	NO
9_Core 2_Lobby 1	NO
9_Core 2_Stairs	NO

Shell and core configuration

Zone	Assumed shell?
9_Core 2_Storage 1	NO
9_Core 2_Storage 2	NO
9_Core 3_Lobby 3	NO
9_Core 3_Stairs	NO
9_Core 4_Lobby 3	NO
9_Core 4_Stairs	NO
9_Core 4_Storage	NO
7_Core 1A_Lift Lobby	NO
7_Core 1A_Stairs	NO
7_Core 1B_Acc WC_VZ1	NO
7_Core 1B_Cleaners Cupboard	NO
7_Core 1B_Female WC_VZ1	NO
7_Core 1B_Male WC_VZ1	NO
7_Core 1B_Stairs	NO
7_Core 1B_Storage	NO
7_Core 2_Cleaners Cupboard	NO
7_Core 2_DWC_VZ2	NO
7_Core 2_Female WC_VZ2	NO
7_Core 2_Lobby	NO
7_Core 2_Lobby 1	NO
7_Core 2_Lobby 2	NO
7_Core 2_Male WC_VZ2	NO
7_Core 2_Stairs	NO
7_Core 2_Storage 1	NO
7_Core 2_Storage 2	NO
7_Core 3_Cleaners Cupboard 1	NO
7_Core 3_Cleaners Cupboard 2	NO
7_Core 3_DWC_VZ3	NO
7_Core 3_Female WC_VZ3	NO
7_Core 3_Lobby	NO
7_Core 3_Lobby 2	NO
7_Core 3_Lobby 3	NO
7_Core 3_Male WC_VZ3	NO
7_Core 3_Stairs	NO
7_Core 4_Cleaners Cupboard	NO
7_Core 4_DWC_VZ4	NO
7_Core 4_Female WC_VZ4	NO
7_Core 4_Lobby 2	NO
7_Core 4_Lobby 3	NO
7_Core 4_Male WC_VZ4	NO
7_Core 4_Stairs	NO
7_Core 4_Storage 1	NO
7_Core 4_Storage 2	NO
7_Office_A_VZ2	NO
7_Office_A_VZ3	NO
7_Office_A_VZ4	NO
7_Office_I_VZ1	NO

Shell and core configuration

Zone	Assumed shell?
7_Office_I_VZ3	NO
7_Office_I_VZ4	NO
7_Office_P_VZ1_East	NO
7_Office_P_VZ1_SE	NO
7_Office_P_VZ1_South	NO
7_Office_P_VZ2_South	NO
7_Office_P_VZ2_West	NO
7_Office_P_VZ3_North	NO
7_Office_P_VZ3_West	NO
7_Office_P_VZ4_East	NO
7_Office_P_VZ4_North	NO
6_Core 1A_Lift Lobby	NO
6_Core 1A_Stairs	NO
6_Core 1B_Acc WC_VZ1	NO
6_Core 1B_Cleaners Cupboard	NO
6_Core 1B_Female WC_VZ1	NO
6_Core 1B_Male WC_VZ1	NO
6_Core 1B_Stairs	NO
6_Core 1B_Storage	NO
6_Core 2_Cleaners Cupboard	NO
6_Core 2_DWC_VZ2	NO
6_Core 2_Female WC_VZ2	NO
6_Core 2_Lobby	NO
6_Core 2_Lobby 1	NO
6_Core 2_Lobby 2	NO
6_Core 2_Male WC_VZ2	NO
6_Core 2_Stairs	NO
6_Core 2_Storage 1	NO
6_Core 2_Storage 2	NO
6_Core 3_Cleaners Cupboard 1	NO
6_Core 3_Cleaners Cupboard 2	NO
6_Core 3_DWC_VZ3	NO
6_Core 3_Female WC_VZ3	NO
6_Core 3_Lobby	NO
6_Core 3_Lobby 2	NO
6_Core 3_Lobby 3	NO
6_Core 3_Male WC_VZ3	NO
6_Core 3_Stairs	NO
6_Core 4_Cleaners Cupboard	NO
6_Core 4_DWC_VZ4	NO
6_Core 4_Female WC_VZ4	NO
6_Core 4_Lobby 2	NO
6_Core 4_Lobby 3	NO
6_Core 4_Male WC_VZ4	NO
6_Core 4_Stairs	NO
6_Core 4_Storage 1	NO
6_Core 4_Storage 2	NO

Shell and core configuration

Zone	Assumed shell?
6_Office_A_VZ2	NO
6_Office_A_VZ3	NO
6_Office_A_VZ4	NO
6_Office_I_VZ1	NO
6_Office_I_VZ3	NO
6_Office_I_VZ4	NO
6_Office_P_VZ1_East	NO
6_Office_P_VZ1_SE	NO
6_Office_P_VZ1_South	NO
6_Office_P_VZ2_South	NO
6_Office_P_VZ2_West	NO
6_Office_P_VZ3_North	NO
6_Office_P_VZ3_West	NO
6_Office_P_VZ4_East	NO
6_Office_P_VZ4_North	NO
8_Office_I_VZ2	NO
7_Office_I_VZ2	NO
6_Office_I_VZ2	NO

General lighting and display lighting

	Luminous efficacy [lm/W]			
Zone name	**Luminaire**	**Lamp**	**Display lamp**	**General lighting [W]**
Standard value	60	60	22	
8_Core 1A_Lift Lobby	-	90	-	84
8_Core 1A_Stairs	-	90	-	52
8_Core 1B_Acc WC_VZ1	-	70	-	33
8_Core 1B_Cleaners Cupboard	82	-	-	10
8_Core 1B_Female WC_VZ1	-	70	-	106
8_Core 1B_Male WC_VZ1	-	70	-	76
8_Core 1B_Stairs	-	90	-	51
8_Core 1B_Storage	82	-	-	21
8_Core 2_Cleaners Cupboard	82	-	-	8
8_Core 2_DWC_VZ2	-	70	-	33
8_Core 2_Female WC_VZ2	-	70	-	98
8_Core 2_Lobby	-	90	-	35
8_Core 2_Lobby 1	-	90	-	19
8_Core 2_Lobby 2	-	90	-	43
8_Core 2_Male WC_VZ2	-	70	-	76
8_Core 2_Stairs	-	90	-	48
8_Core 2_Storage 1	82	-	-	14
8_Core 2_Storage 2	82	-	-	11
8_Core 3_Cleaners Cupboard 1	82	-	-	10
8_Core 3_Cleaners Cupboard 2	82	-	-	8
8_Core 3_DWC_VZ3	-	70	-	34
8_Core 3_Female WC_VZ3	-	70	-	69
8_Core 3_Lobby	-	90	-	40

General lighting and display lighting	Luminous efficacy [lm/W]			
Zone name	**Luminaire**	**Lamp**	**Display lamp**	**General lighting [W]**
Standard value	60	60	22	
8_Core 3_Lobby 2	-	90	-	41
8_Core 3_Lobby 3	-	90	-	16
8_Core 3_Male WC_VZ3	-	70	-	90
8_Core 3_Stairs	-	90	-	49
8_Core 4_Cleaners Cupboard	82	-	-	8
8_Core 4_DWC_VZ4	-	70	-	33
8_Core 4_Female WC_VZ4	-	70	-	70
8_Core 4_Lobby 2	-	90	-	40
8_Core 4_Lobby 3	-	90	-	18
8_Core 4_Male WC_VZ4	-	70	-	82
8_Core 4_Stairs	-	90	-	49
8_Core 4_Storage 1	82	-	-	14
8_Core 4_Storage 2	82	-	-	15
8_Office_A_VZ2	90	-	-	1736
8_Office_A_VZ3	90	-	-	596
8_Office_A_VZ4	90	-	-	1197
8_Office_I_VZ1	90	-	-	832
8_Office_I_VZ3	90	-	-	2842
8_Office_I_VZ4	90	-	-	4679
8_Office_P_VZ1_East	90	-	-	288
8_Office_P_VZ1_SE	90	-	-	162
8_Office_P_VZ1_South	90	-	-	231
8_Office_P_VZ2_South	90	-	-	1113
8_Office_P_VZ2_West	90	-	-	1062
8_Office_P_VZ3_North	90	-	-	775
8_Office_P_VZ3_West	90	-	-	483
8_Office_P_VZ4_East	90	-	-	1058
8_Office_P_VZ4_North	90	-	-	768
9_Core 1A_Stairs	-	90	-	52
9_Core 1B_Male WC	-	70	-	178
9_Core 1B_Stairs	-	90	-	51
9_Core 1B_Storage	82	-	-	33
9_Core 2_Lobby 1	-	90	-	19
9_Core 2_Stairs	-	90	-	48
9_Core 2_Storage 1	82	-	-	11
9_Core 2_Storage 2	82	-	-	14
9_Core 3_Lobby 3	-	90	-	16
9_Core 3_Stairs	-	90	-	49
9_Core 4_Lobby 3	-	90	-	18
9_Core 4_Stairs	-	90	-	49
9_Core 4_Storage	82	-	-	14
7_Core 1A_Lift Lobby	-	90	-	84
7_Core 1A_Stairs	-	90	-	52

General lighting and display lighting	Luminous efficacy [lm/W]			
Zone name	**Luminaire**	**Lamp**	**Display lamp**	**General lighting [W]**
Standard value	60	60	22	
7_Core 1B_Acc WC_VZ1	-	70	-	33
7_Core 1B_Cleaners Cupboard	82	-	-	10
7_Core 1B_Female WC_VZ1	-	70	-	106
7_Core 1B_Male WC_VZ1	-	70	-	76
7_Core 1B_Stairs	-	90	-	51
7_Core 1B_Storage	82	-	-	21
7_Core 2_Cleaners Cupboard	82	-	-	8
7_Core 2_DWC_VZ2	-	70	-	33
7_Core 2_Female WC_VZ2	-	70	-	98
7_Core 2_Lobby	-	90	-	35
7_Core 2_Lobby 1	-	90	-	19
7_Core 2_Lobby 2	-	90	-	43
7_Core 2_Male WC_VZ2	-	70	-	76
7_Core 2_Stairs	-	90	-	48
7_Core 2_Storage 1	82	-	-	14
7_Core 2_Storage 2	82	-	-	11
7_Core 3_Cleaners Cupboard 1	82	-	-	10
7_Core 3_Cleaners Cupboard 2	82	-	-	8
7_Core 3_DWC_VZ3	-	70	-	34
7_Core 3_Female WC_VZ3	-	70	-	69
7_Core 3_Lobby	-	90	-	40
7_Core 3_Lobby 2	-	90	-	41
7_Core 3_Lobby 3	-	90	-	16
7_Core 3_Male WC_VZ3	-	70	-	90
7_Core 3_Stairs	-	90	-	49
7_Core 4_Cleaners Cupboard	82	-	-	8
7_Core 4_DWC_VZ4	-	70	-	33
7_Core 4_Female WC_VZ4	-	70	-	70
7_Core 4_Lobby 2	-	90	-	40
7_Core 4_Lobby 3	-	90	-	18
7_Core 4_Male WC_VZ4	-	70	-	82
7_Core 4_Stairs	-	90	-	49
7_Core 4_Storage 1	82	-	-	14
7_Core 4_Storage 2	82	-	-	15
7_Office_A_VZ2	90	-	-	1736
7_Office_A_VZ3	90	-	-	596
7_Office_A_VZ4	90	-	-	1197
7_Office_I_VZ1	90	-	-	832
7_Office_I_VZ3	90	-	-	2842
7_Office_I_VZ4	90	-	-	4679
7_Office_P_VZ1_East	90	-	-	288
7_Office_P_VZ1_SE	90	-	-	162
7_Office_P_VZ1_South	90	-	-	231

General lighting and display lighting	Luminous efficacy [lm/W]			
Zone name	**Luminaire**	**Lamp**	**Display lamp**	**General lighting [W]**
Standard value	60	60	22	
7_Office_P_VZ2_South	90	-	-	1113
7_Office_P_VZ2_West	90	-	-	1062
7_Office_P_VZ3_North	90	-	-	775
7_Office_P_VZ3_West	90	-	-	483
7_Office_P_VZ4_East	90	-	-	1058
7_Office_P_VZ4_North	90	-	-	768
6_Core 1A_Lift Lobby	-	90	-	84
6_Core 1A_Stairs	-	90	-	52
6_Core 1B_Acc WC_VZ1	-	70	-	33
6_Core 1B_Cleaners Cupboard	82	-	-	10
6_Core 1B_Female WC_VZ1	-	70	-	106
6_Core 1B_Male WC_VZ1	-	70	-	76
6_Core 1B_Stairs	-	90	-	51
6_Core 1B_Storage	82	-	-	21
6_Core 2_Cleaners Cupboard	82	-	-	8
6_Core 2_DWC_VZ2	-	70	-	33
6_Core 2_Female WC_VZ2	-	70	-	98
6_Core 2_Lobby	-	90	-	35
6_Core 2_Lobby 1	-	90	-	19
6_Core 2_Lobby 2	-	90	-	43
6_Core 2_Male WC_VZ2	-	70	-	76
6_Core 2_Stairs	-	90	-	48
6_Core 2_Storage 1	82	-	-	14
6_Core 2_Storage 2	82	-	-	11
6_Core 3_Cleaners Cupboard 1	82	-	-	10
6_Core 3_Cleaners Cupboard 2	82	-	-	8
6_Core 3_DWC_VZ3	-	70	-	34
6_Core 3_Female WC_VZ3	-	70	-	69
6_Core 3_Lobby	-	90	-	40
6_Core 3_Lobby 2	-	90	-	41
6_Core 3_Lobby 3	-	90	-	16
6_Core 3_Male WC_VZ3	-	70	-	90
6_Core 3_Stairs	-	90	-	49
6_Core 4_Cleaners Cupboard	82	-	-	8
6_Core 4_DWC_VZ4	-	70	-	33
6_Core 4_Female WC_VZ4	-	70	-	70
6_Core 4_Lobby 2	-	90	-	40
6_Core 4_Lobby 3	-	90	-	18
6_Core 4_Male WC_VZ4	-	70	-	82
6_Core 4_Stairs	-	90	-	49
6_Core 4_Storage 1	82	-	-	14
6_Core 4_Storage 2	82	-	-	15
6_Office_A_VZ2	90	-	-	1736

General lighting and display lighting	Luminous efficacy [lm/W]			
Zone name	**Luminaire**	**Lamp**	**Display lamp**	**General lighting [W]**
Standard value	60	60	22	
6_Office_A_VZ3	90	-	-	596
6_Office_A_VZ4	90	-	-	1197
6_Office_I_VZ1	90	-	-	832
6_Office_I_VZ3	90	-	-	2842
6_Office_I_VZ4	90	-	-	4679
6_Office_P_VZ1_East	90	-	-	288
6_Office_P_VZ1_SE	90	-	-	162
6_Office_P_VZ1_South	90	-	-	231
6_Office_P_VZ2_South	90	-	-	1113
6_Office_P_VZ2_West	90	-	-	1062
6_Office_P_VZ3_North	90	-	-	775
6_Office_P_VZ3_West	90	-	-	483
6_Office_P_VZ4_East	90	-	-	1058
6_Office_P_VZ4_North	90	-	-	768
8_Office_I_VZ2	90	-	-	6003
7_Office_I_VZ2	90	-	-	6003
6_Office_I_VZ2	90	-	-	6003

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?
8_Office_A_VZ2	NO (-78.5%)	NO
8_Office_A_VZ3	NO (-74.7%)	NO
8_Office_A_VZ4	NO (-66.5%)	NO
8_Office_I_VZ1	NO (-87.9%)	NO
8_Office_I_VZ3	NO (-88.2%)	NO
8_Office_I_VZ4	NO (-90.7%)	NO
8_Office_P_VZ1_East	NO (-60.8%)	NO
8_Office_P_VZ1_SE	NO (-58.4%)	NO
8_Office_P_VZ1_South	NO (-69.1%)	NO
8_Office_P_VZ2_South	NO (-49.6%)	NO
8_Office_P_VZ2_West	NO (-50.5%)	NO
8_Office_P_VZ3_North	NO (-63.9%)	NO
8_Office_P_VZ3_West	NO (-53.8%)	NO
8_Office_P_VZ4_East	NO (-74.6%)	NO
8_Office_P_VZ4_North	NO (-63.4%)	NO
7_Office_A_VZ2	NO (-80.8%)	NO
7_Office_A_VZ3	NO (-67.3%)	NO
7_Office_A_VZ4	NO (-64.1%)	NO
7_Office_I_VZ1	NO (-88.7%)	NO
7_Office_I_VZ3	NO (-88.5%)	NO
7_Office_I_VZ4	NO (-91.2%)	NO
7_Office_P_VZ1_East	NO (-61.9%)	NO
7_Office_P_VZ1_SE	NO (-61.3%)	NO

Zone	Solar gain limit exceeded? (%)	Internal blinds used?
7_Office_P_VZ1_South	NO (-70.7%)	NO
7_Office_P_VZ2_South	NO (-54.7%)	NO
7_Office_P_VZ2_West	NO (-52.7%)	NO
7_Office_P_VZ3_North	NO (-64.4%)	NO
7_Office_P_VZ3_West	NO (-55.7%)	NO
7_Office_P_VZ4_East	NO (-76.4%)	NO
7_Office_P_VZ4_North	NO (-63.8%)	NO
6_Office_A_VZ2	NO (-82.6%)	NO
6_Office_A_VZ3	NO (-70.2%)	NO
6_Office_A_VZ4	NO (-68.9%)	NO
6_Office_I_VZ1	NO (-89.2%)	NO
6_Office_I_VZ3	NO (-88.8%)	NO
6_Office_I_VZ4	NO (-91.8%)	NO
6_Office_P_VZ1_East	NO (-63.1%)	NO
6_Office_P_VZ1_SE	NO (-63.6%)	NO
6_Office_P_VZ1_South	NO (-72.1%)	NO
6_Office_P_VZ2_South	NO (-58.2%)	NO
6_Office_P_VZ2_West	NO (-55.2%)	NO
6_Office_P_VZ3_North	NO (-64.5%)	NO
6_Office_P_VZ3_West	NO (-57.2%)	NO
6_Office_P_VZ4_East	NO (-77.9%)	NO
6_Office_P_VZ4_North	NO (-63.9%)	NO
8_Office_I_VZ2	NO (-88.5%)	NO
7_Office_I_VZ2	NO (-89.5%)	NO
6_Office_I_VZ2	NO (-90.2%)	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?	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]	10478.1	10478.1
External area [m^2]	11124.3	11124.3
Weather	LON	LON
Infiltration [m^3/hm^2@ 50Pa]	3	3
Average conductance [W/K]	5493.04	3997.12
Average U-value [W/m^2K]	0.49	0.36
Alpha value* [%]	17.5	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 Inst.: Hospitals and Care Homes
	C2 Residential Inst.: Residential schools
	C2 Residential Inst.: Universities and colleges
	C2A Secure Residential Inst.
	Residential spaces
	D1 Non-residential Inst.: Community/Day Centre
	D1 Non-residential Inst.: Libraries, Museums, and Galleries
	D1 Non-residential Inst.: Education
	D1 Non-residential Inst.: Primary Health Care Building
	D1 Non-residential Inst.: 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	5.56	2.13
Cooling	4.84	5.68
Auxiliary	12.26	11.97
Lighting	16.31	23.17
Hot water	3.33	2.7
Equipment*	37.15	37.15
TOTAL**	**42.3**	**45.66**

* 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^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]	98.13	84.16
Primary energy* [kWh/m^2]	110.85	128.09
Total emissions [kg/m^2]	18.8	21.7

* 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] Fan coil systems, [HS] LTHW boiler, [HFT] Natural Gas, [CFT] Electricity										
	Actual	19.6	95.5	6.5	5.7	14.1	0.83	4.67	0.91	6
	Notional	7.8	91	2.5	6.7	13.9	0.86	3.79	----	----
[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/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 BCO can give particular attention to items with specifications that 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	0.26	7C000000:Surf[0]
Floor	0.2	0.22	7F000001:Surf[0]
Roof	0.15	0.18	7C000003:Surf[0]
Windows, roof windows, and rooflights	1.5	1.5	TR000002:Surf[0]
Personnel doors	1.5	-	No Personnel doors in building
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

$U_{i\text{-}Typ}$ = 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	3