BRUKL Output Document

HM Government

Compliance with England Building Regulations Part L 2013

Project name **Shell and Core**

1 Triton Square - Existing Refurbishment - Planning Issue

As designed

Date: Wed Jan 04 11:02:06 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, $kgCO_2/m^2.annum$	26.7
Target CO_2 emission rate (TER), $kgCO_2/m^2.annum$	26.7
Building CO_2 emission rate (BER), $kgCO_2/m^2.annum$	22.2
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 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	1C000020:Surf[0]
Floor	0.25	0.22	0.22	1F000007:Surf[0]
Roof	0.25	0.18	0.18	1F00000C:Surf[0]
Windows***, roof windows, and rooflights	2.2	1.52	1.52	1F000003:Surf[1]
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	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- 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.

2- CAV system - Plant + Changing

	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**
1_Office_I_VZ2	-	-	-	-	-	-	-	0.3	-	-	N/A
1_Office_I_VZ3	-	-	-	-	-	-	-	0.3	-	-	N/A
1_Office_I_VZ4	-	-	-	-	-	-	-	0.3	-	-	N/A
1_Office_I_VZ5	-	-	-	-	-	-	-	0.3	-	-	N/A
1_Office_P_VZ2_South	-	-	-	-	-	-	-	0.3	-	-	N/A
1_Office_P_VZ2_West	-	-	-	-	-	-	-	0.3	-	-	N/A
1_Office_P_VZ3_North	-	-	-	-	-	-	-	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
1_Office_P_VZ3_West	-	-	-	-	-	-	-	0.3	-	-	N/A
1_Office_P_VZ4_East	-	-	-	-	-	-	-	0.3	-	-	N/A
1_Office_P_VZ4_North	-	-	-	-	-	-	-	0.3	-	-	N/A
1_Reception_I_VZ1	-	-	-	-	-	-	-	0.3	-	-	N/A
1_Reception_P_VZ1_East	-	-	-	-	-	-	-	0.3	-	-	N/A
1_Reception_P_VZ1_SE	-	-	-	-	-	-	-	0.3	-	-	N/A
1_Reception_P_VZ1_South	-	-	-	-	-	-	-	0.3	-	-	N/A
2_Office_I_VZ2	-	-	-	-	-	-	-	0.3	-	-	N/A
2_Office_I_VZ3	-	-	-	-	-	-	-	0.3	-	-	N/A
2_Office_I_VZ4	-	-	-	-	-	-	-	0.3	-	-	N/A
2_Office_P_VZ2_South	-	-	-	-	-	-	-	0.3	-	-	N/A
2_Office_P_VZ2_West	-	-	-	-	-	-	-	0.3	-	-	N/A
2_Office_P_VZ3_North	-	-	-	-	-	-	-	0.3	-	-	N/A
2_Office_P_VZ3_West	-	-	-	-	-	-	-	0.3	-	-	N/A
2_Office_P_VZ4_East	-	-	-	-	-	-	-	0.3	-	-	N/A
2_Office_P_VZ4_North	-	-	-	-	-	-	-	0.3	-	-	N/A
3_Office_I_VZ2	-	-	-	-	-	-	-	0.3	-	-	N/A
3_Office_I_VZ3	-	-	-	-	-	-	-	0.3	-	-	N/A
3_Office_I_VZ4	-	-	-	-	-	-	-	0.3	-	-	N/A
3_Office_P_VZ2_South	-	-	-	-	-	-	-	0.3	-	-	N/A
3_Office_P_VZ2_West	-	-	-	-	-	-	-	0.3	-	-	N/A
3_Office_P_VZ3_North	-	-	-	-	-	-	-	0.3	-	-	N/A
3_Office_P_VZ3_West	-	-	-	-	-	-	-	0.3	-	-	N/A
3_Office_P_VZ4_East	-	-	-	-	-	-	-	0.3	-	-	N/A
3_Office_P_VZ4_North	-	-	-	-	-	-	-	0.3	-	-	N/A
4_Office_I_VZ2	-	-	-	-	-	-	-	0.3	-	-	N/A
4_Office_I_VZ3	-	-	-	-	-	-	-	0.3	-	-	N/A
4_Office_I_VZ4	-	-	-	-	-	-	-	0.3	-	-	N/A
4_Office_P_VZ2_South	-	-	-	-	-	-	-	0.3	-	-	N/A
4_Office_P_VZ2_West	-	-	-	-	-	-	-	0.3	-	-	N/A
4_Office_P_VZ3_North	-	-	-	-	-	-	-	0.3	-	-	N/A
4_Office_P_VZ3_West	-	-	-	-	-	-	-	0.3	-	-	N/A
4_Office_P_VZ4_East	-	-	-	-	-	-	-	0.3	-	-	N/A
4_Office_P_VZ4_North	-	-	-	-	-	-	-	0.3	-	-	N/A
5_Office_I_VZ2	-	-	-	-	-	-	-	0.3	-	-	N/A
5_Office_I_VZ3	-	-	-	-	-	-	-	0.3	-	-	N/A
5_Office_I_VZ4	-	-	-	-	-	-	-	0.3	-	-	N/A
5_Office_P_VZ2_South	-	-	-	-	-	-	-	0.3	-	-	N/A
5_Office_P_VZ2_West	-	-	-	-	-	-	-	0.3	-	-	N/A
5_Office_P_VZ3_North	-	-	-	-	-	-	-	0.3	-	-	N/A
5_Office_P_VZ3_West	-	-	-	-	-	-	-	0.3	-	-	N/A
5_Office_P_VZ4_East	-	-	-	-	-	-	-	0.3	-	-	N/A
5_Office_P_VZ4_North	-	-	-	-	-	-	-	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
B_I_BMO 1	-	-	-	-	-	-	-	0.3	-	-	N/A
B_I_BMO 2	-	-	-	-	-	-	-	0.3	-	-	N/A
B_I_Mail Room	-	-	-	-	-	-	-	0.3	-	-	N/A
B_I_Unknown	-	-	-	-	-	-	-	0.3	-	-	N/A
GF_Core 2_Reception	-	-	-	-	-	-	-	0.3	-	-	N/A
4_Office_P_VZ1_SE	-	-	-	-	-	-	-	0.3	-	-	N/A
4_Office_P_VZ1_East	-	-	-	-	-	-	-	0.3	-	-	N/A
4_Office_P_VZ1_South	-	-	-	-	-	-	-	0.3	-	-	N/A
4_Office_I_VZ1	-	-	-	-	-	-	-	0.3	-	-	N/A
3_Office_P_VZ1_SE	-	-	-	-	-	-	-	0.3	-	-	N/A
3_Office_P_VZ1_East	-	-	-	-	-	-	-	0.3	-	-	N/A
3_Office_P_VZ1_South	-	-	-	-	-	-	-	0.3	-	-	N/A
3_Office_I_VZ1	-	-	-	-	-	-	-	0.3	-	-	N/A
2_Office_P_VZ1_SE	-	-	-	-	-	-	-	0.3	-	-	N/A
2_Office_P_VZ1_East	-	-	-	-	-	-	-	0.3	-	-	N/A
2_Office_P_VZ1_South	-	-	-	-	-	-	-	0.3	-	-	N/A
2_Office_I_VZ1	-	-	-	-	-	-	-	0.3	-	-	N/A
5_Office_P_VZ1_SE	-	-	-	-	-	-	-	0.3	-	-	N/A
5_Office_P_VZ1_East	-	-	-	-	-	-	-	0.3	-	-	N/A
5_Office_P_VZ1_South	-	-	-	-	-	-	-	0.3	-	-	N/A
5_Office_I_VZ1	-	-	-	-	-	-	-	0.3	-	-	N/A
GF_Retail	-	-	-	-	-	-	-	0.8	-	-	N/A
GF_Security Offce	-	-	-	-	-	-	-	0.3	-	-	N/A
GF_D1 Accommodation	-	-	-	-	-	-	-	0.3	-	-	N/A
1_Reception_P_VZ1_East (upper 1)	-	-	-	-	-	-	-	0.3	-	-	N/A
1_Reception_P_VZ1_SE (upper 1)	-	-	-	-	-	-	-	0.3	-	-	N/A
1_Reception_P_VZ1_South (upper 1)	-	-	-	-	-	-	-	0.3	-	-	N/A

Shell and core configuration

Zone	Assumed shell?
1_Core 1A_Lift Lobby	NO
1_Core 1A_Stairs	NO
1_Core 1B_Acc WC_VZ1	NO
1_Core 1B_Cleaners Cupboard	NO
1_Core 1B_Female WC_VZ1	NO
1_Core 1B_Male WC_VZ1	NO
1_Core 1B_Stairs	NO
1_Core 1B_Storage	NO
1_Core 2_Cleaners Cupboard	NO
1_Core 2_DWC_VZ2	NO
1_Core 2_Female WC_VZ2	NO
1_Core 2_Lobby 1	NO
1_Core 2_Lobby 2	NO
1_Core 2_Lobby 3	NO
1_Core 2_Male WC_VZ2	NO

Shell and core configuration

Zone	Assumed shell?
1_Core 2_Stairs	NO
1_Core 2_Storage	NO
1_Core 3_Cleaners Cupboard 1	NO
1_Core 3_Cleaners Cupboard 2	NO
1_Core 3_DWC_VZ3	NO
1_Core 3_Female WC_VZ3	NO
1_Core 3_Lobby 1	NO
1_Core 3_Lobby 2	NO
1_Core 3_Lobby 3	NO
1_Core 3_Male WC_VZ3	NO
1_Core 3_Stairs	NO
1_Core 4_Cleaners Cupboard	NO
1_Core 4_DWC_VZ4	NO
1_Core 4_Female WC_VZ4	NO
1_Core 4_Lobby 1	NO
1_Core 4_Lobby 2	NO
1_Core 4_Lobby 3	NO
1_Core 4_Male WC_VZ4	NO
1_Core 4_Stairs	NO
1_Core 4_Storage 1	NO
1_Core 4_Storage 2	NO
1_Office_I_VZ2	NO
1_Office_I_VZ3	NO
1_Office_I_VZ4	NO
1_Office_I_VZ5	NO
1_Office_P_VZ2_South	NO
1_Office_P_VZ2_West	NO
1_Office_P_VZ3_North	NO
1_Office_P_VZ3_West	NO
1_Office_P_VZ4_East	NO
1_Office_P_VZ4_North	NO
1_Reception_I_VZ1	NO
1_Reception_P_VZ1_East	NO
1_Reception_P_VZ1_SE	NO
1_Reception_P_VZ1_South	NO
2_Core 1A_Lift Lobby	NO
2_Core 1A_Stairs	NO
2_Core 1B_Acc WC_VZ1	NO
2_Core 1B_Cleaners Cupboard	NO
2_Core 1B_Female WC_VZ1	NO
2_Core 1B_Male WC_VZ1	NO
2_Core 1B_Stairs	NO
2_Core 1B_Storage	NO
2_Core 2_Cleaners Cupboard	NO
2_Core 2_DWC_VZ2	NO
2_Core 2_Female WC_VZ2	NO
2_Core 2_Lobby 1	NO

Shell and core configuration

Zone	Assumed shell?
2_Core 2_Lobby 2	NO
2_Core 2_Lobby 3	NO
2_Core 2_Male WC_VZ2	NO
2_Core 2_Stairs	NO
2_Core 2_Storage	NO
2_Core 3_Cleaners Cupboard 1	NO
2_Core 3_Cleaners Cupboard 2	NO
2_Core 3_DWC_VZ3	NO
2_Core 3_Female WC_VZ3	NO
2_Core 3_Lobby 1	NO
2_Core 3_Lobby 2	NO
2_Core 3_Lobby 3	NO
2_Core 3_Male WC_VZ3	NO
2_Core 3_Stairs	NO
2_Core 4_Cleaners Cupboard	NO
2_Core 4_DWC_VZ4	NO
2_Core 4_Female WC_VZ4	NO
2_Core 4_Lobby 1	NO
2_Core 4_Lobby 2	NO
2_Core 4_Lobby 3	NO
2_Core 4_Male WC_VZ4	NO
2_Core 4_Stairs	NO
2_Core 4_Storage 1	NO
2_Core 4_Storage 2	NO
2_Office_I_VZ2	NO
2_Office_I_VZ3	NO
2_Office_I_VZ4	NO
2_Office_P_VZ2_South	NO
2_Office_P_VZ2_West	NO
2_Office_P_VZ3_North	NO
2_Office_P_VZ3_West	NO
2_Office_P_VZ4_East	NO
2_Office_P_VZ4_North	NO
3_Core 1A_Lift Lobby	NO
3_Core 1A_Stairs	NO
3_Core 1B_Acc WC_VZ1	NO
3_Core 1B_Cleaners Cupboard	NO
3_Core 1B_Female WC_VZ1	NO
3_Core 1B_Male WC_VZ1	NO
3_Core 1B_Stairs	NO
3_Core 1B_Storage	NO
3_Core 2_Cleaners Cupboard	NO
3_Core 2_DWC_VZ2	NO
3_Core 2_Female WC_VZ2	NO
3_Core 2_Lobby 1	NO
3_Core 2_Lobby 2	NO
3_Core 2_Lobby 3	NO

Shell and core configuration

Zone	Assumed shell?
3_Core 2_Male WC_VZ2	NO
3_Core 2_Stairs	NO
3_Core 2_Storage	NO
3_Core 3_Cleaners Cupboard 1	NO
3_Core 3_Cleaners Cupboard 2	NO
3_Core 3_DWC_VZ3	NO
3_Core 3_Female WC_VZ3	NO
3_Core 3_Lobby 1	NO
3_Core 3_Lobby 2	NO
3_Core 3_Lobby 3	NO
3_Core 3_Male WC_VZ3	NO
3_Core 3_Stairs	NO
3_Core 4_Cleaners Cupboard	NO
3_Core 4_DWC_VZ4	NO
3_Core 4_Female WC_VZ4	NO
3_Core 4_Lobby 1	NO
3_Core 4_Lobby 2	NO
3_Core 4_Lobby 3	NO
3_Core 4_Male WC_VZ4	NO
3_Core 4_Stairs	NO
3_Core 4_Storage 1	NO
3_Core 4_Storage 2	NO
3_Office_I_VZ2	NO
3_Office_I_VZ3	NO
3_Office_I_VZ4	NO
3_Office_P_VZ2_South	NO
3_Office_P_VZ2_West	NO
3_Office_P_VZ3_North	NO
3_Office_P_VZ3_West	NO
3_Office_P_VZ4_East	NO
3_Office_P_VZ4_North	NO
4_Core 1A_Lift Lobby	NO
4_Core 1A_Stairs	NO
4_Core 1B_Acc WC_VZ1	NO
4_Core 1B_Cleaners Cupboard	NO
4_Core 1B_Female WC_VZ1	NO
4_Core 1B_Male WC_VZ1	NO
4_Core 1B_Stairs	NO
4_Core 1B_Storage	NO
4_Core 2_Cleaners Cupboard	NO
4_Core 2_DWC_VZ2	NO
4_Core 2_Female WC_VZ2	NO
4_Core 2_Lobby 1	NO
4_Core 2_Lobby 2	NO
4_Core 2_Lobby 3	NO
4_Core 2_Male WC_VZ2	NO
4_Core 2_Stairs	NO

Shell and core configuration

Zone	Assumed shell?
4_Core 2_Storage	NO
4_Core 3_Cleaners Cupboard 1	NO
4_Core 3_Cleaners Cupboard 2	NO
4_Core 3_DWC_VZ3	NO
4_Core 3_Female WC_VZ3	NO
4_Core 3_Lobby 1	NO
4_Core 3_Lobby 2	NO
4_Core 3_Lobby 3	NO
4_Core 3_Male WC_VZ3	NO
4_Core 3_Stairs	NO
4_Core 4_Cleaners Cupboard	NO
4_Core 4_DWC_VZ4	NO
4_Core 4_Female WC_VZ4	NO
4_Core 4_Lobby 1	NO
4_Core 4_Lobby 2	NO
4_Core 4_Lobby 3	NO
4_Core 4_Male WC_VZ4	NO
4_Core 4_Stairs	NO
4_Core 4_Storage	NO
4_Core 4_Storage	NO
4_Office_I_VZ2	NO
4_Office_I_VZ3	NO
4_Office_I_VZ4	NO
4_Office_P_VZ2_South	NO
4_Office_P_VZ2_West	NO
4_Office_P_VZ3_North	NO
4_Office_P_VZ3_West	NO
4_Office_P_VZ4_East	NO
4_Office_P_VZ4_North	NO
5_Core 1A_Lift Lobby	NO
5_Core 1A_Stairs	NO
5_Core 1B_Acc WC_VZ1	NO
5_Core 1B_Cleaners Cupboard	NO
5_Core 1B_Female WC_VZ1	NO
5_Core 1B_Male WC_VZ1	NO
5_Core 1B_Stairs	NO
5_Core 1B_Storage	NO
5_Core 2_Cleaners Cupboard	NO
5_Core 2_DWC_VZ2	NO
5_Core 2_Female WC_VZ2	NO
5_Core 2_Lobby 1	NO
5_Core 2_Lobby 2	NO
5_Core 2_Lobby 3	NO
5_Core 2_Male WC_VZ2	NO
5_Core 2_Stairs	NO
5_Core 2_Storage	NO
5_Core 3_Cleaners Cupboard 1	NO

Shell and core configuration

Zone	Assumed shell?
5_Core 3_Cleaners Cupboard 2	NO
5_Core 3_DWC_VZ3	NO
5_Core 3_Female WC_VZ3	NO
5_Core 3_Lobby 1	NO
5_Core 3_Lobby 2	NO
5_Core 3_Lobby 3	NO
5_Core 3_Male WC_VZ3	NO
5_Core 3_Stairs	NO
5_Core 4_Cleaners Cupboard	NO
5_Core 4_DWC_VZ4	NO
5_Core 4_Female WC_VZ4	NO
5_Core 4_Lobby 1	NO
5_Core 4_Lobby 2	NO
5_Core 4_Lobby 3	NO
5_Core 4_Male WC_VZ4	NO
5_Core 4_Stairs	NO
5_Core 4_Storage 1	NO
5_Core 4_Storage 2	NO
5_Office_I_VZ2	NO
5_Office_I_VZ3	NO
5_Office_I_VZ4	NO
5_Office_P_VZ2_South	NO
5_Office_P_VZ2_West	NO
5_Office_P_VZ3_North	NO
5_Office_P_VZ3_West	NO
5_Office_P_VZ4_East	NO
5_Office_P_VZ4_North	NO
B_Core 2_Circ 1	NO
B_Core 2_Circ 2	NO
B_Core 2_Circ 3	NO
B_Core 2_Circ 4	NO
B_Core 2_Male WC_VZ2	NO
B_Core 2_Stairs	NO
B_I_BMO 1	NO
B_I_BMO 2	NO
B_I_BoH WCs	NO
B_I_Circ 1	NO
B_I_Circ 2	NO
B_I_Circ 3	NO
B_I_Circ 4	NO
B_I_Circ 5	NO
B_I_Generator Plant	NO
B_I_Loading Bay Vent Plant 1	NO
B_I_Loading Bay Vent Plant 2	NO
B_I_Mail Room	NO
B_I_Plant CHW	NO
B_I_Plant Elec_LL Comms	NO

Shell and core configuration

Zone	Assumed shell?
B_I_Plant Elec_LL Comms	NO
B_I_Plant Elec_LL MER	NO
B_I_Plant LTHW	NO
B_I_Plant Tank Room	NO
B_I_Plant TEN 5	NO
B_I_Plant TEN 6	NO
B_I_Plant TX & SW	NO
B_I_Plant TX & SW 2	NO
B_I_Plant Vent Plant 1	NO
B_I_Plant Vent Plant 2	NO
B_I_Unknown	NO
GF_Core 1A_Lift Lobby	NO
GF_Core 1A_Stairs	NO
GF_Core 1B_Circ 2	NO
GF_Core 1B_Circ 3	NO
GF_Core 1B_Circ 4	NO
GF_Core 1B_Stairs	NO
GF_Core 2_AWC	NO
GF_Core 2_Circ 1	NO
GF_Core 2_Circ 2	NO
GF_Core 2_Lobby 1	NO
GF_Core 2_Lobby 2	NO
GF_Core 2_Lobby 3	NO
GF_Core 2_Male WC_VZ2	NO
GF_Core 2_Reception	NO
GF_Core 2_Stair	NO
GF_Core 2_Stairs	NO
GF_Core 2_Storage	NO
GF_Core 3_AWC_VZ3 1	NO
GF_Core 3_AWC_VZ3 2	NO
GF_Core 3_Circ	NO
GF_Core 3_Lobby	NO
GF_Core 3_Lobby 2	NO
GF_Core 3_Lobby 3	NO
GF_Core 3_Stair	NO
GF_Core 3_Stairs	NO
GF_Core 3_WC_VZ3	NO
GF_Core 4_Circ	NO
GF_Core 4_Lobby 1	NO
GF_Core 4_Lobby 2	NO
GF_Core 4_Lobby 3	NO
GF_Core 4_Male WC_VZ4	NO
GF_Core 4_Stairs 1	NO
GF_Core 4_Stairs 2	NO
GF_Core 4_Storage	NO
4_Office_P_VZ1_SE	NO
4_Office_P_VZ1_East	NO

Shell and core configuration

Zone	Assumed shell?
4_Office_P_VZ1_South	NO
4_Office_I_VZ1	NO
3_Office_P_VZ1_SE	NO
3_Office_P_VZ1_East	NO
3_Office_P_VZ1_South	NO
3_Office_I_VZ1	NO
2_Office_P_VZ1_SE	NO
2_Office_P_VZ1_East	NO
2_Office_P_VZ1_South	NO
2_Office_I_VZ1	NO
5_Office_P_VZ1_SE	NO
5_Office_P_VZ1_East	NO
5_Office_P_VZ1_South	NO
5_Office_I_VZ1	NO
GF_Retail	NO
GF_Security Offce	NO
GF_Security WC	NO
GF_Circ	NO
GF_Security Storage	NO
GF_Showers & Changing	NO
GF_Cycle Store	NO
GF_Gym	NO
GF_D1 Accommodation	NO
B_Gym Changing Rooms	NO
1_Reception_P_VZ1_East (upper 1)	NO
1_Reception_P_VZ1_SE (upper 1)	NO
1_Reception_P_VZ1_South (upper 1)	NO

General lighting and display lighting

	Luminous efficacy [lm/W]			
Zone name	**Luminaire**	**Lamp**	**Display lamp**	**General lighting [W]**
Standard value	60	60	22	
1_Core 1A_Lift Lobby	-	90	-	88
1_Core 1A_Stairs	-	90	-	52
1_Core 1B_Acc WC_VZ1	-	70	-	33
1_Core 1B_Cleaners Cupboard	82	-	-	10
1_Core 1B_Female WC_VZ1	-	70	-	106
1_Core 1B_Male WC_VZ1	-	70	-	76
1_Core 1B_Stairs	-	90	-	51
1_Core 1B_Storage	82	-	-	21
1_Core 2_Cleaners Cupboard	82	-	-	8
1_Core 2_DWC_VZ2	-	70	-	33
1_Core 2_Female WC_VZ2	-	70	-	86
1_Core 2_Lobby 1	-	90	-	19
1_Core 2_Lobby 2	-	90	-	43
1_Core 2_Lobby 3	-	90	-	32

General lighting and display lighting	Luminous efficacy [lm/W]			
Zone name	**Luminaire**	**Lamp**	**Display lamp**	**General lighting [W]**
Standard value	60	60	22	
1_Core 2_Male WC_VZ2	-	70	-	76
1_Core 2_Stairs	-	90	-	48
1_Core 2_Storage	82	-	-	14
1_Core 3_Cleaners Cupboard 1	82	-	-	10
1_Core 3_Cleaners Cupboard 2	82	-	-	8
1_Core 3_DWC_VZ3	-	70	-	34
1_Core 3_Female WC_VZ3	-	70	-	80
1_Core 3_Lobby 1	-	90	-	36
1_Core 3_Lobby 2	-	90	-	41
1_Core 3_Lobby 3	-	90	-	16
1_Core 3_Male WC_VZ3	-	70	-	103
1_Core 3_Stairs	-	90	-	49
1_Core 4_Cleaners Cupboard	82	-	-	8
1_Core 4_DWC_VZ4	-	70	-	33
1_Core 4_Female WC_VZ4	-	70	-	84
1_Core 4_Lobby 1	-	90	-	32
1_Core 4_Lobby 2	-	90	-	40
1_Core 4_Lobby 3	-	90	-	18
1_Core 4_Male WC_VZ4	-	70	-	82
1_Core 4_Stairs	-	90	-	49
1_Core 4_Storage 1	82	-	-	14
1_Core 4_Storage 2	82	-	-	15
1_Office_I_VZ2	90	-	-	10994
1_Office_I_VZ3	90	-	-	5386
1_Office_I_VZ4	90	-	-	8700
1_Office_I_VZ5	90	-	-	3130
1_Office_P_VZ2_South	90	-	-	1178
1_Office_P_VZ2_West	90	-	-	1085
1_Office_P_VZ3_North	90	-	-	810
1_Office_P_VZ3_West	90	-	-	519
1_Office_P_VZ4_East	90	-	-	1113
1_Office_P_VZ4_North	90	-	-	805
1_Reception_I_VZ1	-	90	15	571
1_Reception_P_VZ1_East	-	90	15	196
1_Reception_P_VZ1_SE	-	90	15	69
1_Reception_P_VZ1_South	-	90	15	108
2_Core 1A_Lift Lobby	-	90	-	88
2_Core 1A_Stairs	-	90	-	52
2_Core 1B_Acc WC_VZ1	-	70	-	33
2_Core 1B_Cleaners Cupboard	82	-	-	10
2_Core 1B_Female WC_VZ1	-	70	-	106
2_Core 1B_Male WC_VZ1	-	70	-	76
2_Core 1B_Stairs	-	90	-	51

General lighting and display lighting	Luminous efficacy [lm/W]			
Zone name	**Luminaire**	**Lamp**	**Display lamp**	**General lighting [W]**
Standard value	60	60	22	
2_Core 1B_Storage	82	-	-	21
2_Core 2_Cleaners Cupboard	82	-	-	8
2_Core 2_DWC_VZ2	-	70	-	33
2_Core 2_Female WC_VZ2	-	70	-	86
2_Core 2_Lobby 1	-	90	-	19
2_Core 2_Lobby 2	-	90	-	43
2_Core 2_Lobby 3	-	90	-	32
2_Core 2_Male WC_VZ2	-	70	-	76
2_Core 2_Stairs	-	90	-	48
2_Core 2_Storage	82	-	-	14
2_Core 3_Cleaners Cupboard 1	82	-	-	10
2_Core 3_Cleaners Cupboard 2	82	-	-	8
2_Core 3_DWC_VZ3	-	70	-	34
2_Core 3_Female WC_VZ3	-	70	-	80
2_Core 3_Lobby 1	-	90	-	36
2_Core 3_Lobby 2	-	90	-	41
2_Core 3_Lobby 3	-	90	-	16
2_Core 3_Male WC_VZ3	-	70	-	103
2_Core 3_Stairs	-	90	-	49
2_Core 4_Cleaners Cupboard	82	-	-	8
2_Core 4_DWC_VZ4	-	70	-	33
2_Core 4_Female WC_VZ4	-	70	-	84
2_Core 4_Lobby 1	-	90	-	32
2_Core 4_Lobby 2	-	90	-	40
2_Core 4_Lobby 3	-	90	-	18
2_Core 4_Male WC_VZ4	-	70	-	82
2_Core 4_Stairs	-	90	-	49
2_Core 4_Storage 1	82	-	-	15
2_Core 4_Storage 2	82	-	-	14
2_Office_I_VZ2	90	-	-	10996
2_Office_I_VZ3	90	-	-	5386
2_Office_I_VZ4	90	-	-	8700
2_Office_P_VZ2_South	90	-	-	1176
2_Office_P_VZ2_West	90	-	-	1085
2_Office_P_VZ3_North	90	-	-	810
2_Office_P_VZ3_West	90	-	-	519
2_Office_P_VZ4_East	90	-	-	1113
2_Office_P_VZ4_North	90	-	-	805
3_Core 1A_Lift Lobby	-	90	-	88
3_Core 1A_Stairs	-	90	-	52
3_Core 1B_Acc WC_VZ1	-	70	-	33
3_Core 1B_Cleaners Cupboard	82	-	-	10
3_Core 1B_Female WC_VZ1	-	70	-	106

General lighting and display lighting	Luminous efficacy [lm/W]			
Zone name	**Luminaire**	**Lamp**	**Display lamp**	**General lighting [W]**
Standard value	60	60	22	
3_Core 1B_Male WC_VZ1	-	70	-	76
3_Core 1B_Stairs	-	90	-	51
3_Core 1B_Storage	82	-	-	21
3_Core 2_Cleaners Cupboard	82	-	-	8
3_Core 2_DWC_VZ2	-	70	-	33
3_Core 2_Female WC_VZ2	-	70	-	86
3_Core 2_Lobby 1	-	90	-	19
3_Core 2_Lobby 2	-	90	-	43
3_Core 2_Lobby 3	-	90	-	32
3_Core 2_Male WC_VZ2	-	70	-	76
3_Core 2_Stairs	-	90	-	48
3_Core 2_Storage	82	-	-	14
3_Core 3_Cleaners Cupboard 1	82	-	-	8
3_Core 3_Cleaners Cupboard 2	82	-	-	10
3_Core 3_DWC_VZ3	-	70	-	34
3_Core 3_Female WC_VZ3	-	70	-	80
3_Core 3_Lobby 1	-	90	-	36
3_Core 3_Lobby 2	-	90	-	41
3_Core 3_Lobby 3	-	90	-	16
3_Core 3_Male WC_VZ3	-	70	-	103
3_Core 3_Stairs	-	90	-	49
3_Core 4_Cleaners Cupboard	82	-	-	8
3_Core 4_DWC_VZ4	-	70	-	33
3_Core 4_Female WC_VZ4	-	70	-	84
3_Core 4_Lobby 1	-	90	-	32
3_Core 4_Lobby 2	-	90	-	40
3_Core 4_Lobby 3	-	90	-	18
3_Core 4_Male WC_VZ4	-	70	-	82
3_Core 4_Stairs	-	90	-	49
3_Core 4_Storage 1	82	-	-	15
3_Core 4_Storage 2	82	-	-	14
3_Office_I_VZ2	90	-	-	10996
3_Office_I_VZ3	90	-	-	5386
3_Office_I_VZ4	90	-	-	8700
3_Office_P_VZ2_South	90	-	-	1176
3_Office_P_VZ2_West	90	-	-	1085
3_Office_P_VZ3_North	90	-	-	810
3_Office_P_VZ3_West	90	-	-	519
3_Office_P_VZ4_East	90	-	-	1113
3_Office_P_VZ4_North	90	-	-	805
4_Core 1A_Lift Lobby	-	90	-	88
4_Core 1A_Stairs	-	90	-	52
4_Core 1B_Acc WC_VZ1	-	70	-	33

General lighting and display lighting	Luminous efficacy [lm/W]			
Zone name	**Luminaire**	**Lamp**	**Display lamp**	**General lighting [W]**
Standard value	60	60	22	
4_Core 1B_Cleaners Cupboard	82	-	-	10
4_Core 1B_Female WC_VZ1	-	70	-	106
4_Core 1B_Male WC_VZ1	-	70	-	76
4_Core 1B_Stairs	-	90	-	51
4_Core 1B_Storage	82	-	-	21
4_Core 2_Cleaners Cupboard	82	-	-	8
4_Core 2_DWC_VZ2	-	70	-	33
4_Core 2_Female WC_VZ2	-	70	-	86
4_Core 2_Lobby 1	-	90	-	19
4_Core 2_Lobby 2	-	90	-	43
4_Core 2_Lobby 3	-	90	-	32
4_Core 2_Male WC_VZ2	-	70	-	76
4_Core 2_Stairs	-	90	-	48
4_Core 2_Storage	82	-	-	14
4_Core 3_Cleaners Cupboard 1	82	-	-	10
4_Core 3_Cleaners Cupboard 2	82	-	-	8
4_Core 3_DWC_VZ3	-	70	-	34
4_Core 3_Female WC_VZ3	-	70	-	80
4_Core 3_Lobby 1	-	90	-	36
4_Core 3_Lobby 2	-	90	-	41
4_Core 3_Lobby 3	-	90	-	16
4_Core 3_Male WC_VZ3	-	70	-	103
4_Core 3_Stairs	-	90	-	49
4_Core 4_Cleaners Cupboard	82	-	-	8
4_Core 4_DWC_VZ4	-	70	-	33
4_Core 4_Female WC_VZ4	-	70	-	84
4_Core 4_Lobby 1	-	90	-	32
4_Core 4_Lobby 2	-	90	-	40
4_Core 4_Lobby 3	-	90	-	18
4_Core 4_Male WC_VZ4	-	70	-	82
4_Core 4_Stairs	-	90	-	49
4_Core 4_Storage	82	-	-	15
4_Core 4_Storage	82	-	-	14
4_Office_I_VZ2	90	-	-	10996
4_Office_I_VZ3	90	-	-	5386
4_Office_I_VZ4	90	-	-	8700
4_Office_P_VZ2_South	90	-	-	1176
4_Office_P_VZ2_West	90	-	-	1085
4_Office_P_VZ3_North	90	-	-	810
4_Office_P_VZ3_West	90	-	-	519
4_Office_P_VZ4_East	90	-	-	1113
4_Office_P_VZ4_North	90	-	-	805
5_Core 1A_Lift Lobby	-	90	-	88

General lighting and display lighting	Luminous efficacy [lm/W]			
Zone name	**Luminaire**	**Lamp**	**Display lamp**	**General lighting [W]**
Standard value	60	60	22	
5_Core 1A_Stairs	-	90	-	52
5_Core 1B_Acc WC_VZ1	-	70	-	33
5_Core 1B_Cleaners Cupboard	82	-	-	10
5_Core 1B_Female WC_VZ1	-	70	-	106
5_Core 1B_Male WC_VZ1	-	70	-	76
5_Core 1B_Stairs	-	90	-	51
5_Core 1B_Storage	82	-	-	21
5_Core 2_Cleaners Cupboard	82	-	-	8
5_Core 2_DWC_VZ2	-	70	-	33
5_Core 2_Female WC_VZ2	-	70	-	86
5_Core 2_Lobby 1	-	90	-	19
5_Core 2_Lobby 2	-	90	-	43
5_Core 2_Lobby 3	-	90	-	32
5_Core 2_Male WC_VZ2	-	70	-	76
5_Core 2_Stairs	-	90	-	48
5_Core 2_Storage	82	-	-	14
5_Core 3_Cleaners Cupboard 1	82	-	-	10
5_Core 3_Cleaners Cupboard 2	82	-	-	8
5_Core 3_DWC_VZ3	-	70	-	34
5_Core 3_Female WC_VZ3	-	70	-	80
5_Core 3_Lobby 1	-	90	-	36
5_Core 3_Lobby 2	-	90	-	41
5_Core 3_Lobby 3	-	90	-	16
5_Core 3_Male WC_VZ3	-	70	-	103
5_Core 3_Stairs	-	90	-	49
5_Core 4_Cleaners Cupboard	82	-	-	8
5_Core 4_DWC_VZ4	-	70	-	33
5_Core 4_Female WC_VZ4	-	70	-	84
5_Core 4_Lobby 1	-	90	-	32
5_Core 4_Lobby 2	-	90	-	40
5_Core 4_Lobby 3	-	90	-	18
5_Core 4_Male WC_VZ4	-	70	-	82
5_Core 4_Stairs	-	90	-	49
5_Core 4_Storage 1	82	-	-	15
5_Core 4_Storage 2	82	-	-	14
5_Office_I_VZ2	90	-	-	8760
5_Office_I_VZ3	90	-	-	4048
5_Office_I_VZ4	90	-	-	6749
5_Office_P_VZ2_South	90	-	-	1178
5_Office_P_VZ2_West	90	-	-	1098
5_Office_P_VZ3_North	90	-	-	810
5_Office_P_VZ3_West	90	-	-	519
5_Office_P_VZ4_East	90	-	-	1125

General lighting and display lighting	Luminous efficacy [lm/W]			
Zone name	**Luminaire**	**Lamp**	**Display lamp**	**General lighting [W]**
Standard value	60	60	22	
5_Office_P_VZ4_North	90	-	-	805
B_Core 2_Circ 1	-	90	-	40
B_Core 2_Circ 2	-	90	-	49
B_Core 2_Circ 3	-	90	-	77
B_Core 2_Circ 4	-	90	-	41
B_Core 2_Male WC_VZ2	-	70	-	136
B_Core 2_Stairs	-	90	-	48
B_I_BMO 1	90	-	-	184
B_I_BMO 2	90	-	-	276
B_I_BoH WCs	-	70	-	201
B_I_Circ 1	-	90	-	45
B_I_Circ 2	-	90	-	211
B_I_Circ 3	-	90	-	257
B_I_Circ 4	-	90	-	573
B_I_Circ 5	-	90	-	342
B_I_Generator Plant	-	82	15	767
B_I_Loading Bay Vent Plant 1	82	-	-	202
B_I_Loading Bay Vent Plant 2	82	-	-	300
B_I_Mail Room	82	-	-	222
B_I_Plant CHW	82	-	-	1122
B_I_Plant Elec_LL Comms	82	-	-	246
B_I_Plant Elec_LL Comms	82	-	-	154
B_I_Plant Elec_LL MER	82	-	-	498
B_I_Plant LTHW	82	-	-	538
B_I_Plant Tank Room	82	-	-	2510
B_I_Plant TEN 5	82	-	-	176
B_I_Plant TEN 6	-	82	15	583
B_I_Plant TX & SW	82	-	-	429
B_I_Plant TX & SW 2	82	-	-	451
B_I_Plant Vent Plant 1	82	-	-	2491
B_I_Plant Vent Plant 2	82	-	-	781
B_I_Unknown	82	-	-	220
GF_Core 1A_Lift Lobby	-	90	-	90
GF_Core 1A_Stairs	-	90	-	54
GF_Core 1B_Circ 2	-	90	-	81
GF_Core 1B_Circ 3	-	90	-	140
GF_Core 1B_Circ 4	-	90	-	41
GF_Core 1B_Stairs	-	90	-	54
GF_Core 2_AWC	-	70	-	51
GF_Core 2_Circ 1	-	90	-	36
GF_Core 2_Circ 2	-	90	-	26
GF_Core 2_Lobby 1	-	90	-	19
GF_Core 2_Lobby 2	-	90	-	45

General lighting and display lighting	Luminous efficacy [lm/W]			
Zone name	**Luminaire**	**Lamp**	**Display lamp**	**General lighting [W]**
Standard value	60	60	22	
GF_Core 2_Lobby 3	-	90	-	42
GF_Core 2_Male WC_VZ2	-	70	-	82
GF_Core 2_Reception	-	90	15	513
GF_Core 2_Stair	-	90	-	42
GF_Core 2_Stairs	-	90	-	51
GF_Core 2_Storage	82	-	-	15
GF_Core 3_AWC_VZ3 1	-	70	-	80
GF_Core 3_AWC_VZ3 2	-	70	-	81
GF_Core 3_Circ	-	90	-	38
GF_Core 3_Lobby	-	90	-	46
GF_Core 3_Lobby 2	-	90	-	43
GF_Core 3_Lobby 3	-	90	-	16
GF_Core 3_Stair	-	90	-	42
GF_Core 3_Stairs	-	90	-	52
GF_Core 3_WC_VZ3	-	70	-	48
GF_Core 4_Circ	-	90	-	32
GF_Core 4_Lobby 1	-	90	-	34
GF_Core 4_Lobby 2	-	90	-	42
GF_Core 4_Lobby 3	-	90	-	18
GF_Core 4_Male WC_VZ4	-	70	-	88
GF_Core 4_Stairs 1	-	90	-	38
GF_Core 4_Stairs 2	-	90	-	52
GF_Core 4_Storage	82	-	-	16
4_Office_P_VZ1_SE	90	-	-	162
4_Office_P_VZ1_East	90	-	-	458
4_Office_P_VZ1_South	90	-	-	340
4_Office_I_VZ1	90	-	-	893
3_Office_P_VZ1_SE	90	-	-	162
3_Office_P_VZ1_East	90	-	-	458
3_Office_P_VZ1_South	90	-	-	340
3_Office_I_VZ1	90	-	-	893
2_Office_P_VZ1_SE	90	-	-	162
2_Office_P_VZ1_East	90	-	-	458
2_Office_P_VZ1_South	90	-	-	340
2_Office_I_VZ1	90	-	-	893
5_Office_P_VZ1_SE	90	-	-	162
5_Office_P_VZ1_East	90	-	-	181
5_Office_P_VZ1_South	90	-	-	277
5_Office_I_VZ1	90	-	-	625
GF_Retail	90	-	-	2269
GF_Security Offce	90	-	-	437
GF_Security WC	70	-	-	104
GF_Circ	-	90	-	273

General lighting and display lighting	Luminous efficacy [lm/W]			
Zone name	**Luminaire**	**Lamp**	**Display lamp**	**General lighting [W]**
Standard value	60	60	22	
GF_Security Storage	82	-	-	160
GF_Showers & Changing	-	82	-	672
GF_Cycle Store	-	82	-	952
GF_Gym	90	-	-	9846
GF_D1 Accommodation	90	-	-	6743
B_Gym Changing Rooms	-	82	-	933
1_Reception_P_VZ1_East (upper 1)	-	90	15	0
1_Reception_P_VZ1_SE (upper 1)	-	90	15	0
1_Reception_P_VZ1_South (upper 1)	-	90	15	0

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?
1_Office_I_VZ2	NO (-100%)	NO
1_Office_I_VZ3	NO (-100%)	NO
1_Office_I_VZ4	NO (-100%)	NO
1_Office_I_VZ5	N/A	N/A
1_Office_P_VZ2_South	NO (-99.6%)	NO
1_Office_P_VZ2_West	NO (-99.6%)	NO
1_Office_P_VZ3_North	NO (-99.7%)	NO
1_Office_P_VZ3_West	NO (-99.6%)	NO
1_Office_P_VZ4_East	NO (-99.6%)	NO
1_Office_P_VZ4_North	NO (-99.7%)	NO
1_Reception_I_VZ1	NO (-91.8%)	NO
1_Reception_P_VZ1_East	NO (-62.7%)	NO
1_Reception_P_VZ1_SE	NO (-76.4%)	NO
1_Reception_P_VZ1_South	NO (-65%)	NO
2_Office_I_VZ2	NO (-100%)	NO
2_Office_I_VZ3	NO (-100%)	NO
2_Office_I_VZ4	NO (-100%)	NO
2_Office_P_VZ2_South	NO (-99.6%)	NO
2_Office_P_VZ2_West	NO (-99.6%)	NO
2_Office_P_VZ3_North	NO (-99.7%)	NO
2_Office_P_VZ3_West	NO (-99.6%)	NO
2_Office_P_VZ4_East	NO (-99.6%)	NO
2_Office_P_VZ4_North	NO (-99.7%)	NO
3_Office_I_VZ2	NO (-100%)	NO
3_Office_I_VZ3	NO (-100%)	NO
3_Office_I_VZ4	NO (-100%)	NO
3_Office_P_VZ2_South	NO (-99.6%)	NO
3_Office_P_VZ2_West	NO (-99.7%)	NO
3_Office_P_VZ3_North	NO (-99.7%)	NO
3_Office_P_VZ3_West	NO (-99.7%)	NO
3_Office_P_VZ4_East	NO (-99.6%)	NO

Zone	Solar gain limit exceeded? (%)	Internal blinds used?
3_Office_P_VZ4_North	NO (-99.7%)	NO
4_Office_I_VZ2	NO (-100%)	NO
4_Office_I_VZ3	NO (-100%)	NO
4_Office_I_VZ4	NO (-100%)	NO
4_Office_P_VZ2_South	NO (-99.6%)	NO
4_Office_P_VZ2_West	NO (-99.7%)	NO
4_Office_P_VZ3_North	NO (-99.7%)	NO
4_Office_P_VZ3_West	NO (-99.7%)	NO
4_Office_P_VZ4_East	NO (-99.6%)	NO
4_Office_P_VZ4_North	NO (-99.7%)	NO
5_Office_I_VZ2	NO (-94.8%)	NO
5_Office_I_VZ3	NO (-93.2%)	NO
5_Office_I_VZ4	NO (-95.4%)	NO
5_Office_P_VZ2_South	NO (-45.1%)	NO
5_Office_P_VZ2_West	NO (-42.8%)	NO
5_Office_P_VZ3_North	NO (-55.7%)	NO
5_Office_P_VZ3_West	NO (-42%)	NO
5_Office_P_VZ4_East	NO (-73%)	NO
5_Office_P_VZ4_North	NO (-53.1%)	NO
B_I_BMO 1	N/A	N/A
B_I_BMO 2	N/A	N/A
B_I_Generator Plant	N/A	N/A
B_I_Loading Bay Vent Plant 1	N/A	N/A
B_I_Loading Bay Vent Plant 2	N/A	N/A
B_I_Mail Room	N/A	N/A
B_I_Plant CHW	N/A	N/A
B_I_Plant Elec_LL Comms	N/A	N/A
B_I_Plant Elec_LL Comms	N/A	N/A
B_I_Plant Elec_LL MER	N/A	N/A
B_I_Plant LTHW	N/A	N/A
B_I_Plant Tank Room	N/A	N/A
B_I_Plant TEN 5	N/A	N/A
B_I_Plant TEN 6	N/A	N/A
B_I_Plant TX & SW	N/A	N/A
B_I_Plant TX & SW 2	N/A	N/A
B_I_Plant Vent Plant 1	N/A	N/A
B_I_Plant Vent Plant 2	N/A	N/A
B_I_Unknown	N/A	N/A
GF_Core 2_Reception	N/A	N/A
4_Office_P_VZ1_SE	NO (-65.2%)	NO
4_Office_P_VZ1_East	NO (-61.4%)	NO
4_Office_P_VZ1_South	NO (-63.2%)	NO
4_Office_I_VZ1	NO (-91%)	NO
3_Office_P_VZ1_SE	NO (-70.6%)	NO
3_Office_P_VZ1_East	NO (-62.3%)	NO
3_Office_P_VZ1_South	NO (-70.9%)	NO
3_Office_I_VZ1	NO (-91.7%)	NO
2_Office_P_VZ1_SE	NO (-73.1%)	NO
2_Office_P_VZ1_East	NO (-62.9%)	NO

Zone	Solar gain limit exceeded? (%)	Internal blinds used?
2_Office_P_VZ1_South	NO (-74.2%)	NO
2_Office_I_VZ1	NO (-91.9%)	NO
5_Office_P_VZ1_SE	NO (-63.7%)	NO
5_Office_P_VZ1_East	NO (-52.9%)	NO
5_Office_P_VZ1_South	NO (-63.3%)	NO
5_Office_I_VZ1	NO (-91.3%)	NO
GF_Retail	NO (-86.4%)	NO
GF_Security Offce	N/A	N/A
GF_Security WC	N/A	N/A
GF_Security Storage	N/A	N/A
GF_Showers & Changing	N/A	N/A
GF_Gym	NO (-93.6%)	NO
GF_D1 Accommodation	NO (-71.8%)	NO
B_Gym Changing Rooms	N/A	N/A
1_Reception_P_VZ1_East (upper 1)	NO (-92%)	NO
1_Reception_P_VZ1_SE (upper 1)	NO (-94%)	NO
1_Reception_P_VZ1_South (upper 1)	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]	31103.9	31103.9
External area [m^2]	16639.4	16639.4
Weather	LON	LON
Infiltration [m^3/hm^2@ 50Pa]	5	3
Average conductance [W/K]	7373.07	6348.86
Average U-value [W/m^2K]	0.44	0.38
Alpha value* [%]	11.9	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	1.98	0.8
Cooling	5.95	6.91
Auxiliary	11.06	10.61
Lighting	15.18	22.18
Hot water	12.15	13.97
Equipment*	50.22	50.22
TOTAL**	**46.32**	**54.48**

* 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]	100.25	96.75
Primary energy* [kWh/m^2]	159.97	193.27
Total emissions [kg/m^2]	22.2	26.7

* 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	8.2	111.9	2.7	6.7	13	0.83	4.67	0.91	6
	Notional	3.1	113.3	1	8.3	13.5	0.86	3.79	----	----
[ST] Constant volume system (variable fresh air rate), [HS] LTHW boiler, [HFT] Natural Gas, [CFT] Electricity										
	Actual	1.3	96.6	0.4	7.7	10.8	0.9	3.47	0.91	6
	Notional	1.8	90.7	0.6	6.6	6.8	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	1C000020:Surf[0]
Floor	0.2	0.22	1F000007:Surf[0]
Roof	0.15	0.18	1F00000C:Surf[0]
Windows, roof windows, and rooflights	1.5	1.52	1F000003:Surf[1]
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	5