

Project name

181217 Alexander House B1

As designed

Date: Mon Dec 17 08:17:51 2018

Administrative information

Building Details

Address: Alexander House, READING, RG1

Certification tool

Calculation engine: Apache

Calculation engine version: 7.0.10

Interface to calculation engine: IES Virtual Environment

Interface to calculation engine version: 7.0.10

BRUKL compliance check version: v5.4.b.0

Owner Details

Name:

Telephone number:

Address: , ,

Certifier details

Name: Wilson Gray Consulting

Telephone number: 0191 691 6770

Address: Swan Building Prestwick Park, Newcastle upon Tyne, NE20 9SJ

Criterion 1: The calculated CO₂ emission rate for the building must not exceed the target

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

CO ₂ emission rate from the notional building, kgCO ₂ /m ² .annum	54.2
Target CO ₂ emission rate (TER), kgCO ₂ /m ² .annum	54.2
Building CO ₂ emission rate (BER), kgCO ₂ /m ² .annum	81.9
Are emissions from the building less than or equal to the target?	BER > TER
Are as built details the same as used in the BER calculations?	Separate submission

Criterion 2: The performance of the building fabric and fixed building services should achieve reasonable overall standards of energy efficiency

Values which do not achieve the standards in the Non-Domestic Building Services Compliance Guide and Part L are displayed in red.

Building fabric

Element	U _a -Limit	U _a -Calc	U _i -Calc	Surface where the maximum value occurs*
Wall**	0.35	0.35	0.35	0500002E:Surf[1]
Floor	0.25	0.25	0.25	00000006:Surf[0]
Roof	0.25	0.25	0.25	0500002E:Surf[2]
Windows***, roof windows, and rooflights	2.2	2.2	2.2	00000001: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 -Limit = Limiting area-weighted average U-values [W/(m ² K)] U _a -Calc = Calculated area-weighted average U-values [W/(m ² K)] U _i -Calc = Calculated maximum individual element U-values [W/(m ² K)] * There might be more than one surface where the maximum U-value occurs. ** Automatic U-value check by the tool does not apply to curtain walls whose limiting standard is similar to that for windows. *** Display windows and similar glazing are excluded from the U-value check. N.B.: Neither roof ventilators (inc. smoke vents) nor swimming pool basins are modelled or checked against the limiting standards by the tool.				

Air Permeability	Worst acceptable standard	This building
m ³ /(h.m ²) at 50 Pa	10	10

Building services

The standard values listed below are minimum values for efficiencies and maximum values for SFPs. Refer to the Non-Domestic Building Services Compliance Guide for details.

Whole building lighting automatic monitoring & targeting with alarms for out-of-range values	NO
Whole building electric power factor achieved by power factor correction	<0.9

1- 04 B1 LTHW HRU

	Heating efficiency	Cooling efficiency	Radiant efficiency	SFP [W/(l/s)]	HR efficiency
This system	0.91	-	0.14	0	0.65
Standard value	0.91*	N/A	N/A	N/A	0.5
Automatic monitoring & targeting with alarms for out-of-range values for this HVAC system					NO
* 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.					

2- 02 B1 LTHW Mech Extract

	Heating efficiency	Cooling efficiency	Radiant efficiency	SFP [W/(l/s)]	HR efficiency
This system	0.91	-	0.21	0	-
Standard value	N/A	N/A	N/A	N/A	N/A
Automatic monitoring & targeting with alarms for out-of-range values for this HVAC system					NO

3- 05 B1 DX Comms

	Heating efficiency	Cooling efficiency	Radiant efficiency	SFP [W/(l/s)]	HR efficiency
This system	2.5	3.6	0	0	-
Standard value	2.5*	3.2	N/A	N/A	N/A
Automatic monitoring & targeting with alarms for out-of-range values for this HVAC system					NO
* Standard shown is for all types >12 kW output, except absorption and gas engine heat pumps. For types <=12 kW output, refer to EN 14825 for limiting standards.					

4- 01 B1 LTHW Nat Vent

	Heating efficiency	Cooling efficiency	Radiant efficiency	SFP [W/(l/s)]	HR efficiency
This system	0.91	-	0.3	0	-
Standard value	N/A	N/A	N/A	N/A	N/A
Automatic monitoring & targeting with alarms for out-of-range values for this HVAC system					NO

1- 03 B1 LTHW DHWS

	Water heating efficiency	Storage loss factor [kWh/litre per day]
This building	0.91	0.005
Standard value	0.9*	N/A
* Standard shown is for gas boilers >30 kW output. For boilers <=30 kW output, limiting efficiency is 0.73.		

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

[illegible]

[illegible]

[illegible]

[illegible]

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	
Studio	-	-	0.5	-	-	-	-	-	-	-	N/A	
Studio	-	-	0.5	-	-	-	-	-	-	-	N/A	
Studio	-	-	0.5	-	-	-	-	-	-	-	N/A	
Studio	-	-	0.5	-	-	-	-	-	-	-	N/A	
Studio	-	-	0.5	-	-	-	-	-	-	-	N/A	
Studio	-	-	0.5	-	-	-	-	-	-	-	N/A	
Studio	-	-	0.5	-	-	-	-	-	-	-	N/A	
Studio	-	-	0.5	-	-	-	-	-	-	-	N/A	
Studio	-	-	0.5	-	-	-	-	-	-	-	N/A	
Studio	-	-	0.5	-	-	-	-	-	-	-	N/A	
Studio	-	-	0.5	-	-	-	-	-	-	-	N/A	
Studio	-	-	0.5	-	-	-	-	-	-	-	N/A	
Studio	-	-	0.5	-	-	-	-	-	-	-	N/A	
Studio	-	-	0.5	-	-	-	-	-	-	-	N/A	
Studio	-	-	0.5	-	-	-	-	-	-	-	N/A	
Studio (DA)	-	-	0.5	-	-	-	-	-	-	-	N/A	
Studio (DA)	-	-	0.5	-	-	-	-	-	-	-	N/A	
Studio (DA)	-	-	0.5	-	-	-	-	-	-	-	N/A	
Studio (DA)	-	-	0.5	-	-	-	-	-	-	-	N/A	
Studio to do	-	-	0.5	-	-	-	-	-	-	-	N/A	
Studio to do	-	-	0.5	-	-	-	-	-	-	-	N/A	
Study Room	-	-	-	1.9	-	-	-	-	-	-	N/A	
WC DA	-	-	0.5	-	-	-	-	-	-	-	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	
Cinema Room		65	-	-	215
Circulation		-	65	-	55
Circulation		-	65	-	14
Circulation		-	65	-	55
Circulation		-	65	-	21
Circulation		-	65	-	21
Circulation		-	65	-	55
Circulation		-	65	-	14
Circulation		-	65	-	21
Circulation		-	65	-	73
Circulation		-	65	-	73
Circulation		-	65	-	14
Circulation		-	65	-	55
Circulation		-	65	-	44
Circulation		-	65	-	40
Circulation		-	65	-	55

General lighting and display lighting		Luminous efficacy [lm/W]			
Zone name		Luminaire	Lamp	Display lamp	General lighting [W]
	Standard value	60	60	22	
Circulation		-	65	-	95
Circulation		-	65	-	26
Circulation		-	65	-	40
Circulation		-	65	-	72
Circulation		-	65	-	45
Circulation		-	65	-	15
Circulation		-	65	-	21
Circulation		-	65	-	55
Circulation		-	65	-	24
Circulation		-	65	-	21
Circulation		-	65	-	41
Circulation		-	65	-	55
Circulation		-	65	-	86
Circulation		-	65	-	21
Circulation		-	65	-	93
Circulation		-	65	-	55
Circulation		-	65	-	21
Circulation		-	65	-	83
Circulation		-	65	-	80
Circulation		-	65	-	45
Circulation		-	65	-	65
Circulation		-	65	-	39
Circulation		-	65	-	40
Circulation		-	65	-	61
Circulation		-	65	-	95
Circulation		-	65	-	73
Circulation		-	65	-	55
Circulation		-	65	-	14
Circulation		-	65	-	23
Circulation		-	65	-	55
Circulation		-	65	-	95
Circulation		-	65	-	73
Circulation		-	65	-	73
Circulation		-	65	-	14
Circulation		-	65	-	26
Circulation		-	65	-	27
Circulation		-	65	-	36
Circulation		-	65	-	60
Circulation		-	65	-	27
Circulation		-	65	-	36
Circulation		-	65	-	36
Circulation		-	65	-	49
Circulation		-	65	-	36

General lighting and display lighting		Luminous efficacy [lm/W]			
Zone name		Luminaire	Lamp	Display lamp	General lighting [W]
	Standard value	60	60	22	
Ensuite Studio		-	65	-	25
Ensuite Studio		-	65	-	23
Ensuite Studio		-	65	-	25
Ensuite Studio		-	65	-	25
Ensuite Studio		-	65	-	26
Ensuite Studio		-	65	-	29
Ensuite Studio		-	65	-	26
Ensuite Studio		-	65	-	25
Ensuite Studio (DA)		-	65	-	23
Ensuite Studio (DA)		-	65	-	33
Ensuite Studio (DA)		-	65	-	28
Ensuite Studio (DA)		-	65	-	26
Games Room		-	65	-	62
Gym		-	65	-	138
IT Hub		65	-	-	30
Kitchen		-	65	-	103
Kitchen		-	65	-	100
Kitchen		-	65	-	94
Kitchen		-	65	-	99
Kitchen		-	65	-	94
Kitchen		-	65	-	100
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Kitchen		-	65	-	100
Kitchen		-	65	-	99
Kitchen		-	65	-	94
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Kitchen		-	65	-	99
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Kitchen		-	65	-	94</

General lighting and display lighting		Luminous efficacy [lm/W]			
Zone name		Luminaire	Lamp	Display lamp	General lighting [W]
	Standard value	60	60	22	
Plant		65	-	-	241
Plant		65	-	-	636
Plant Room		65	-	-	361
Post Room		65	-	-	105
Reception		-	65	22	60
Stairs		-	65	-	54
Stairs		-	65	-	46
Stairs		-	65	-	57
Stairs		-	65	-	46
Stairs		-	65	-	54
Stairs		-	65	-	57
Stairs		-	65	-	46
Stairs		-	65	-	54
Stairs		-	65	-	41
Stairs		-	65	-	49
Stairs		-	65	-	46
Stairs		-	65	-	54
Stairs		-	65	-	54
Stairs		-	65	-	54
Std Room		-	65	-	29
Std Room		-	65	-	30
Std Room		-	65	-	29
Std Room		-	65	-	30
Std Room		-	65	-	28
Std Room		-	65	-	29
Std Room		-	65	-	33
Std Room		-	65	-	30
Std Room		-	65	-	30
Std Room		-	65	-	30
Std Room		-	65	-	29
Std Room		-	65	-	30
Std Room		-	65	-	27
Std Room		-	65	-	29
Std Room		-	65	-	29
Std Room		-	65	-	30
Std Room		-	65	-	30
Std Room		-	65	-	30
Std Room		-	65	-	30
Std Room		-	65	-	27
Std Room		-	65	-	30
Std Room		-	65	-	30
Std Room		-	65	-	29

General lighting and display lighting		Luminous efficacy [lm/W]			
Zone name		Luminaire	Lamp	Display lamp	General lighting [W]
	Standard value	60	60	22	
Std Room		-	65	-	29
Std Room		-	65	-	30
Std Room		-	65	-	32
Std Room		-	65	-	29
Std Room		-	65	-	27
Std Room		-	65	-	27
Std Room		-	65	-	30
Std Room		-	65	-	30
Std Room		-	65	-	30
Std Room		-	65	-	29
Std Room		-	65	-	30
Std Room		-	65	-	29
Std Room		-	65	-	30
Std Room		-	65	-	29
Std Room		-	65	-	29
Std Room		-	65	-	30
Std Room		-	65	-	30
Std Room		-	65	-	27
Std Room		-	65	-	28
Std Room		-	65	-	28
Std Room		-	65	-	28
Std Room		-	65	-	30
Std Room		-	65	-	30
Std Room		-	65	-	29
Std Room		-	65	-	30
Std Room		-	65	-	30
Std Room		-	65	-	30
Std Room		-	65	-	29
Std Room		-	65	-	27
Std Room		-	65	-	29
Std Room		-	65	-	27
Std Room		-	65	-	29
Std Room		-	65	-	30
Std Room		-	65	-	30
Std Room		-	65	-	29
Std Room		-	65	-	27
Std Room		-	65	-	28
Std Room		-	65	-	30
Std Room		-	65	-	30
Std Room		-	65	-	29
Std Room		-	65	-	30
Std Room		-	65	-	30
Std Room		-	65	-	29
Std Room		-	65	-	29
Std Room		-	65	-	29
Std Room		-	65	-	29
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Std Room		-	65	-	29
Std Room		-	65	-	29
Std Room		-	65	-	29
Std Room		-	65	-	29
Std Room		-	65	-	29
Std Room		-	65	-	29
Std Room		-	65	-	29
Std Room		-	65	-	29
Std Room		-	65	-	29
Std Room		-	65	-	29
Std Room		-			

General lighting and display lighting		Luminous efficacy [lm/W]			
Zone name		Luminaire	Lamp	Display lamp	General lighting [W]
	Standard value	60	60	22	
Std Room		-	65	-	29
Std Room		-	65	-	29
Std Room		-	65	-	29
Std Room		-	65	-	30
Std Room		-	65	-	27
Std Room		-	65	-	29
Std Room		-	65	-	28
Std Room		-	65	-	30
Std Room		-	65	-	29
Std Room		-	65	-	30
Std Room		-	65	-	29
Std Room		-	65	-	30
Std Room		-	65	-	30
Std Room		-	65	-	27
Std Room		-	65	-	28
Std Room		-	65	-	29
Std Room		-	65	-	27
Std Room		-	65	-	29
Std Room		-	65	-	30
Std Room		-	65	-	30
Std Room		-	65	-	29
Std Room		-	65	-	28
Std Room		-	65	-	29
Std Room		-	65	-	29
Std Room		-	65	-	30
Std Room		-	65	-	31
Std Room		-	65	-	32
Std Room		-	65	-	32
Std Room		-	65	-	31
Std Room		-	65	-	33
Std Room		-	65	-	33
Std Room		-	65	-	32
Std Room		-	65	-	33
Std Room		-	65	-	30
Std Room		-	65	-	33
Std Room		-	65	-	33
Std Room		-	65	-	32
Std Room		-	65	-	30
Std Room		-	65	-	32
Std Room		-	65	-	30
Std Room		-	65	-	29
Std Room		-	65	-	27
Std Room		-	65	-	30

General lighting and display lighting		Luminous efficacy [lm/W]			General lighting [W]
Zone name		Luminaire	Lamp	Display lamp	
	Standard value	60	60	22	
Std Room		-	65	-	30
Std Room Dis		-	65	-	40
Std Room Dis		-	65	-	40
Std Room Dis		-	65	-	40
Std Room Dis		-	65	-	40
Std Room Dis		-	65	-	40
Std Room Dis		-	65	-	40
Store		65	-	-	8
Store		65	-	-	8
Store		65	-	-	26
Store		65	-	-	8
Store		65	-	-	8
Store		65	-	-	8
Store		65	-	-	8
Store Bikes		65	-	-	53
Store Bins		65	-	-	95
Store Cleaner		65	-	-	14
Studio		-	65	-	48
Studio		-	65	-	37
Studio		-	65	-	42
Studio		-	65	-	37
Studio		-	65	-	50
Studio		-	65	-	40
Studio		-	65	-	45
Studio		-	65	-	42
Studio		-	65	-	42
Studio		-	65	-	42
Studio		-	65	-	50
Studio		-	65	-	42
Studio		-	65	-	37
Studio		-	65	-	37
Studio		-	65	-	37
Studio		-	65	-	37
Studio		-	65	-	42
Studio (DA)		-	65	-	49
Studio (DA)		-	65	-	51
Studio (DA)		-	65	-	52
Studio (DA)		-	65	-	51
Studio to do		-	65	-	53
Studio to do		-	65	-	53
Study Room		65	-	-	200
WC DA		-	65	-	56

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?
Cinema Room	N/A	N/A
Games Room	N/A	N/A
Gym	N/A	N/A
IT Hub	N/A	N/A
Kitchen	NO (-65.1%)	NO
Kitchen	NO (-56.2%)	NO
Kitchen	NO (-47.5%)	NO
Kitchen	NO (-75.2%)	NO
Kitchen	NO (-42.6%)	NO
Kitchen	NO (-69.5%)	NO
Kitchen	NO (-57.1%)	NO
Kitchen	NO (-58.6%)	NO
Kitchen	NO (-80.8%)	NO
Kitchen	NO (-45.4%)	NO
Kitchen	NO (-44.7%)	NO
Kitchen	NO (-82.1%)	NO
Kitchen	NO (-59.5%)	NO
Kitchen	NO (-77.8%)	NO
Kitchen	NO (-43.3%)	NO
Kitchen	NO (-77.1%)	NO
Kitchen	NO (-73.9%)	NO
Kitchen	NO (-72.9%)	NO
Kitchen	NO (-64.9%)	NO
Kitchen	NO (-68.9%)	NO
Kitchen	NO (-48.1%)	NO
Kitchen	NO (-78.1%)	NO
Lounge Quiet	NO (-20.7%)	NO
Lounge TV	N/A	N/A
Meeting Bookable Space	NO (-16.7%)	NO
Meeting Room	NO (-75.2%)	NO
Office	NO (-72.4%)	NO
Post Room	N/A	N/A
Reception	NO (-53.2%)	NO
Std Room	NO (-57.5%)	NO
Std Room	NO (-56.2%)	NO
Std Room	NO (-56.2%)	NO
Std Room	NO (-57.4%)	NO
Std Room	NO (-64.2%)	NO
Std Room	NO (-74.8%)	NO
Std Room	NO (-74.1%)	NO
Std Room	NO (-61.7%)	NO
Std Room	NO (-62.5%)	NO
Std Room	NO (-80%)	NO
Std Room	NO (-63.1%)	NO

Zone	Solar gain limit exceeded? (%)	Internal blinds used?
Std Room	NO (-74%)	NO
Std Room	NO (-89.9%)	NO
Std Room	NO (-71.5%)	NO
Std Room	NO (-53.6%)	NO
Std Room	NO (-77.2%)	NO
Std Room	NO (-67.4%)	NO
Std Room	NO (-67.3%)	NO
Std Room	NO (-86.4%)	NO
Std Room	NO (-67.6%)	NO
Std Room	NO (-68.8%)	NO
Std Room	NO (-64.2%)	NO
Std Room	NO (-67%)	NO
Std Room	NO (-61.8%)	NO
Std Room	NO (-63.5%)	NO
Std Room	NO (-86.2%)	NO
Std Room	NO (-72.9%)	NO
Std Room	NO (-92%)	NO
Std Room	NO (-84.9%)	NO
Std Room	NO (-60.7%)	NO
Std Room	NO (-64.1%)	NO
Std Room	NO (-64.5%)	NO
Std Room	NO (-63.7%)	NO
Std Room	NO (-74.9%)	NO
Std Room	NO (-73.3%)	NO
Std Room	NO (-66.7%)	NO
Std Room	NO (-65%)	NO
Std Room	NO (-70.1%)	NO
Std Room	NO (-67.5%)	NO
Std Room	NO (-70.9%)	NO
Std Room	NO (-68.6%)	NO
Std Room	NO (-68.3%)	NO
Std Room	NO (-85.2%)	NO
Std Room	NO (-52.6%)	NO
Std Room	NO (-62.3%)	NO
Std Room	NO (-62.4%)	NO
Std Room	NO (-63.7%)	NO
Std Room	NO (-68.6%)	NO
Std Room	NO (-68.4%)	NO
Std Room	NO (-77.9%)	NO
Std Room	NO (-54.8%)	NO
Std Room	NO (-85.3%)	NO
Std Room	NO (-73%)	NO
Std Room	NO (-90.5%)	NO
Std Room	NO (-63%)	NO
Std Room	NO (-57.6%)	NO
Std Room	NO (-79.5%)	NO
Std Room	NO (-56%)	NO
Std Room	NO (-87%)	NO
Std Room	NO (-72%)	NO

Zone	Solar gain limit exceeded? (%)	Internal blinds used?
Std Room	NO (-65.3%)	NO
Std Room	NO (-66.2%)	NO
Std Room	NO (-65.8%)	NO
Std Room	NO (-75.5%)	NO
Std Room	NO (-74.5%)	NO
Std Room	NO (-70.3%)	NO
Std Room	NO (-68.7%)	NO
Std Room	NO (-73.7%)	NO
Std Room	NO (-56.6%)	NO
Std Room	NO (-72.2%)	NO
Std Room	NO (-69.6%)	NO
Std Room	NO (-86.7%)	NO
Std Room	NO (-53.2%)	NO
Std Room	NO (-61.6%)	NO
Std Room	NO (-75%)	NO
Std Room	NO (-66.7%)	NO
Std Room	NO (-66.9%)	NO
Std Room	NO (-70.3%)	NO
Std Room	NO (-69.8%)	NO
Std Room	NO (-91.6%)	NO
Std Room	NO (-74.5%)	NO
Std Room	NO (-54.9%)	NO
Std Room	NO (-88.1%)	NO
Std Room	NO (-76.4%)	NO
Std Room	NO (-70.5%)	NO
Std Room	NO (-71.4%)	NO
Std Room	NO (-70.1%)	NO
Std Room	NO (-53.7%)	NO
Std Room	NO (-80.2%)	NO
Std Room	NO (-75.3%)	NO
Std Room	NO (-65.7%)	NO
Std Room	NO (-74.3%)	NO
Std Room	NO (-80.3%)	NO
Std Room	NO (-60.3%)	NO
Std Room	NO (-55%)	NO
Std Room	NO (-63.8%)	NO
Std Room	NO (-72.2%)	NO
Std Room	NO (-72.1%)	NO
Std Room	NO (-74.8%)	NO
Std Room	NO (-62.5%)	NO
Std Room	NO (-82.4%)	NO
Std Room	NO (-78.4%)	NO
Std Room	NO (-61.9%)	NO
Std Room	NO (-89.6%)	NO
Std Room	NO (-79.1%)	NO
Std Room	NO (-93%)	NO
Std Room	NO (-84.2%)	NO
Std Room	NO (-70.5%)	NO
Std Room	NO (-73.8%)	NO

Zone	Solar gain limit exceeded? (%)	Internal blinds used?
Std Room	NO (-61.3%)	NO
Std Room	NO (-59.9%)	NO
Std Room	NO (-59.7%)	NO
Std Room	NO (-61.9%)	NO
Std Room	NO (-68.1%)	NO
Std Room	NO (-67.5%)	NO
Std Room	NO (-87.1%)	NO
Std Room	NO (-66.2%)	NO
Std Room	NO (-65.6%)	NO
Std Room	NO (-75.8%)	NO
Std Room	NO (-72.9%)	NO
Std Room	NO (-52.9%)	NO
Std Room	NO (-85.6%)	NO
Std Room	NO (-63.7%)	NO
Std Room	NO (-58.6%)	NO
Std Room	NO (-71.8%)	NO
Std Room	NO (-56.4%)	NO
Std Room	NO (-59.7%)	NO
Std Room	NO (-65.4%)	NO
Std Room	NO (-71.3%)	NO
Std Room	NO (-72%)	NO
Std Room	NO (-67.3%)	NO
Std Room	NO (-56.2%)	NO
Std Room	NO (-64.9%)	NO
Std Room	NO (-63.8%)	NO
Std Room	NO (-71.4%)	NO
Std Room	NO (-68.5%)	NO
Std Room	NO (-74.1%)	NO
Std Room	NO (-51.2%)	NO
Std Room	NO (-70.5%)	NO
Std Room	NO (-72%)	NO
Std Room	NO (-74.8%)	NO
Std Room	NO (-73%)	NO
Std Room	NO (-75.7%)	NO
Std Room	NO (-73.5%)	NO
Std Room	NO (-60.6%)	NO
Std Room	NO (-85.1%)	NO
Std Room	NO (-62.8%)	NO
Std Room	NO (-57.2%)	NO
Std Room	NO (-58.8%)	NO
Std Room	NO (-75.9%)	NO
Std Room	NO (-58.3%)	NO
Std Room	NO (-68.3%)	NO
Std Room	NO (-70.9%)	NO
Std Room Dis	NO (-52.9%)	NO
Std Room Dis	NO (-57.8%)	NO
Std Room Dis	NO (-65.9%)	NO
Std Room Dis	NO (-61.3%)	NO
Std Room Dis	NO (-65%)	NO

Zone	Solar gain limit exceeded? (%)	Internal blinds used?
Std Room Dis	NO (-50.2%)	NO
Studio	NO (-80.2%)	NO
Studio	NO (-71.4%)	NO
Studio	NO (-70.1%)	NO
Studio	NO (-72%)	NO
Studio	NO (-75.1%)	NO
Studio	NO (-75.5%)	NO
Studio	NO (-73.6%)	NO
Studio	NO (-64.9%)	NO
Studio	NO (-68.5%)	NO
Studio	NO (-59.4%)	NO
Studio	NO (-78.9%)	NO
Studio	NO (-66.9%)	NO
Studio	NO (-67.5%)	NO
Studio	NO (-72.2%)	NO
Studio	NO (-62%)	NO
Studio	NO (-70%)	NO
Studio	NO (-69.6%)	NO
Studio (DA)	NO (-64.5%)	NO
Studio (DA)	NO (-77.4%)	NO
Studio (DA)	NO (-74.5%)	NO
Studio (DA)	NO (-72.8%)	NO
Studio to do	NO (-62%)	NO
Studio to do	NO (-66.1%)	NO
Study Room	NO (-10.7%)	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]	4886.2	4886.2
External area [m ²]	4624.7	4624.7
Weather	LON	LON
Infiltration [m ³ /hm ² @ 50Pa]	10	3
Average conductance [W/K]	3603.79	2520.49
Average U-value [W/m ² K]	0.78	0.55
Alpha value* [%]	10.03	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
100 C2 Residential Institutions: Universities and colleges
C2A Secure Residential Institutions
Residential spaces
D1 Non-residential Institutions: Community/Day Centre
D1 Non-residential Institutions: Libraries, Museums, and Galleries
D1 Non-residential Institutions: Education
D1 Non-residential Institutions: Primary Health Care Building
D1 Non-residential Institutions: Crown and County Courts
D2 General Assembly and Leisure, Night Clubs, and Theatres
Others: Passenger terminals
Others: Emergency services
Others: Miscellaneous 24hr activities
Others: Car Parks 24 hrs
Others: Stand alone utility block

Energy Consumption by End Use [kWh/m²]

	Actual	Notional
Heating	79.01	57.74
Cooling	0.17	0.12
Auxiliary	12.2	10.72
Lighting	11.79	11.76
Hot water	133.79	112.98
Equipment*	40.43	40.43
TOTAL **	236.96	193.32

* Energy used by equipment does not count towards the total for consumption or calculating emissions.

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

Energy Production by Technology [kWh/m²]

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

Energy & CO₂ Emissions Summary

	Actual	Notional
Heating + cooling demand [MJ/m ²]	232.54	180.8
Primary energy* [kWh/m ²]	476.62	269.02
Total emissions [kg/m ²]	81.9	54.2

* 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] Central heating using water: radiators, [HS] Direct or storage electric heater, [HFT] Electricity, [CFT] Electricity										
Actual	269	0	92	0	3	0.81	0	0.91	0	
Notional	0	0	0	0	0	0	0	----	----	
[ST] Central heating using water: radiators, [HS] Direct or storage electric heater, [HFT] Electricity, [CFT] Electricity										
Actual	397.3	0	135.9	0	29.9	0.81	0	0.91	0	
Notional	121.8	0	39.3	0	1.4	0.86	0	----	----	
[ST] Central heating using water: radiators, [HS] LTHW boiler, [HFT] Natural Gas, [CFT] Electricity										
Actual	89.5	0	30.6	0	23.1	0.81	0	0.91	0	
Notional	429.4	0	138.4	0	31.5	0.86	0	----	----	
[ST] Split or multi-split system, [HS] Heat pump (electric): air source, [HFT] Electricity, [CFT] Electricity										
Actual	0	1116.2	0	121.3	0	2.33	2.56	2.5	3.6	
Notional	13	0	4.2	0	7	0.86	0	----	----	
[ST] No Heating or Cooling										
Actual	0	0	0	0	0	0	0	0	0	
Notional	0	1127.3	0	82.6	0	2.56	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 _{i-Typ}	U _{i-Min}	Surface where the minimum value occurs*
Wall	0.23	0.35	0500002E:Surf[1]
Floor	0.2	0.25	00000006:Surf[0]
Roof	0.15	0.25	0500002E:Surf[2]
Windows, roof windows, and rooflights	1.5	2.2	0500002E: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-Typ} = Typical individual element U-values [W/(m²K)]		U _{i-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	10