

Project name

Union UP1 - As-Built BRUKL**As built****Date:** Tue Mar 10 15:15:48 2026**Administrative information****Building Details****Address:** Union Park (UP1), Hillingdon, UB3 4DG**Certification tool****Calculation engine:** Apache**Calculation engine version:** 7.0.30**Interface to calculation engine:** IES Virtual Environment**Interface to calculation engine version:** 7.0.30**BRUKL compliance check version:** v5.6.b.0**Certifier details****Name:** Shelley Pepperdine**Telephone number:** 02075353149**Address:** HDR, 240 Blackfirs Rd, London, SE1 8EW**Criterion 1: The calculated CO₂ emission rate for the building must not exceed the target**

CO ₂ emission rate from the notional building, kgCO ₂ /m ² .annum	294
Target CO ₂ emission rate (TER), kgCO ₂ /m ² .annum	294
Building CO ₂ emission rate (BER), kgCO ₂ /m ² .annum	46.8
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 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	0.2	0.2	P1000055:Surf[0]
Floor	0.25	0.08	0.08	P1000050:Surf[0]
Roof	0.25	0.05	0.05	03000003:Surf[0]
Windows***, roof windows, and rooflights	2.2	1.03	1.03	P1000081:Surf[2]
Personnel doors	2.2	2.2	2.2	P100009E:Surf[0]
Vehicle access & similar large doors	1.5	1.5	1.5	P100005A:Surf[0]
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	6.15

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 to 0.95

1- UP1 System 3 - Electric Radiators + extracts

	Heating efficiency	Cooling efficiency	Radiant efficiency	SFP [W/(l/s)]	HR efficiency
This system	1	-	0	-	0.75
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					YES

2- UP1 System 2 - Electric Radiators [Circulation East]

	Heating efficiency	Cooling efficiency	Radiant efficiency	SFP [W/(l/s)]	HR efficiency
This system	1	-	0	-	0.75
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					YES

3- UP1 System 7 - DX-2 Cooling -L0 Plant/ANR/UPS

	Heating efficiency	Cooling efficiency	Radiant efficiency	SFP [W/(l/s)]	HR efficiency
This system	4.24	6.7	0	-	0.75
Standard value	2.5*	2.6	N/A	N/A	0.65
Automatic monitoring & targeting with alarms for out-of-range values for this HVAC system					YES
* 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- UP1 System 6 - VRF Office East [Conf/Breakout/Recep/Faith/Security/SOC]

	Heating efficiency	Cooling efficiency	Radiant efficiency	SFP [W/(l/s)]	HR efficiency
This system	3.51	6.12	0	-	0.75
Standard value	2.5*	2.6	N/A	N/A	0.65
Automatic monitoring & targeting with alarms for out-of-range values for this HVAC system					YES
* 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.					

5- UP1 System 7 - DX-1 Cooling [Catcha room]

	Heating efficiency	Cooling efficiency	Radiant efficiency	SFP [W/(l/s)]	HR efficiency
This system	4.16	6.7	0	-	0.75
Standard value	2.5*	2.6	N/A	N/A	0.65
Automatic monitoring & targeting with alarms for out-of-range values for this HVAC system					YES
* 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.					

6- UP1 System 2 - Electric Radiators [Circulation West]

	Heating efficiency	Cooling efficiency	Radiant efficiency	SFP [W/(l/s)]	HR efficiency
This system	1	-	0	-	0.75
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					YES

7- UP1 System 1 - Air Curtain [Loading Bay]

	Heating efficiency	Cooling efficiency	Radiant efficiency	SFP [W/(l/s)]	HR efficiency
This system	1	-	0	-	0.75
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

8- UP1 System 4 - Adiabatic Cooler-2 [Switchroom]

	Heating efficiency	Cooling efficiency	Radiant efficiency	SFP [W/(l/s)]	HR efficiency
This system	1	44	0	-	-
Standard value	N/A	3.2	N/A	N/A	N/A
Automatic monitoring & targeting with alarms for out-of-range values for this HVAC system					YES

9- UP1 System 4 - Adiabatic Cooler-1 [Data Hall]

	Heating efficiency	Cooling efficiency	Radiant efficiency	SFP [W/(l/s)]	HR efficiency
This system	1	44	0	-	-
Standard value	N/A	3.2	N/A	N/A	N/A
Automatic monitoring & targeting with alarms for out-of-range values for this HVAC system					YES

1- DHW - Electric point of use

	Water heating efficiency	Storage loss factor [kWh/litre per day]
This building	1	-
Standard value	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
Level 03 Zone S2 - UP1-L04-D.WC		-	-	0.4	-	-	-	-	-	-	-	N/A
Level 03 Zone S3 - UP1-L04-WCs Lobby		-	-	0.4	-	-	-	-	-	-	-	N/A
Level 04 Zone S1 - UP1-L04-Cleaner		-	-	0.4	-	-	-	-	-	-	-	N/A
UP1-L00-Breakout		-	1.5	-	-	-	-	-	-	-	-	N/A
UP1-L00-Catcher1		-	1.9	-	-	-	-	-	-	-	-	N/A
UP1-L00-Catcher2		-	1.9	-	-	-	-	-	-	-	-	N/A
UP1-L00-Circulation1 E		-	1.5	-	-	-	-	-	-	-	-	N/A
UP1-L00-Circulation2		-	1.9	-	-	-	-	-	-	-	-	N/A
UP1-L00-Circulation2 E		-	1.5	-	-	-	-	-	-	-	-	N/A
UP1-L00-Circulation2 W		-	1.9	-	-	-	-	-	-	-	-	N/A
UP1-L00-Circulation3 E		-	1.5	-	-	-	-	-	-	-	-	N/A

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		
UP1-L00-Circulation8	-	1.9	-	-	-	-	-	-	-	-	N/A
UP1-L00-Cleaners	-	-	0.4	-	-	-	-	-	-	-	N/A
UP1-L00-Conference Room	-	1.5	-	-	-	-	-	-	-	-	N/A
UP1-L00-D.WC2	-	-	0.4	-	-	-	-	-	-	-	N/A
UP1-L00-Faith Room	-	1.5	-	-	-	-	-	-	-	-	N/A
UP1-L00-Goods lift Lobby	-	1.9	-	-	-	-	-	-	-	-	N/A
UP1-L00-IDF	-	1.5	-	-	-	-	-	-	-	-	N/A
UP1-L00-Loading Bay1	-	1.9	-	-	-	-	-	-	-	-	N/A
UP1-L00-Male WC	-	-	0.4	-	-	-	-	-	-	-	N/A
UP1-L00-Office	-	1.5	-	-	-	-	-	-	-	-	N/A
UP1-L00-Reception	-	1.5	-	-	-	-	-	-	-	-	N/A
UP1-L00-Secondary Goods Lift Lobby	-	1.9	-	-	-	-	-	-	-	-	N/A
UP1-L00-SOC security Office	-	1.9	-	-	-	-	-	-	-	-	N/A
UP1-L00-SOC Security Office	-	1.9	-	-	-	-	-	-	-	-	N/A
UP1-L00-SOC Security Office	-	1.9	-	-	-	-	-	-	-	-	N/A
UP1-L00-Staging Area	-	1.9	-	-	-	-	-	-	-	-	N/A
UP1-L00-Stair1	-	1.9	-	-	-	-	-	-	-	-	N/A
UP1-L00-UPS Catcher 2	-	1.9	-	-	-	-	-	-	-	-	N/A
UP1-L00-UPS Catcher1	-	1.9	-	-	-	-	-	-	-	-	N/A
UP1-L01-0124-Stair	-	1.9	-	-	-	-	-	-	-	-	N/A
UP1-L01-Catcher DH1	-	1.9	-	-	-	-	-	-	-	-	N/A
UP1-L01-Catcher DH4	-	1.9	-	-	-	-	-	-	-	-	N/A
UP1-L01-Circulation W1	-	1.9	-	-	-	-	-	-	-	-	N/A
UP1-L01-Circulation W3	-	1.9	-	-	-	-	-	-	-	-	N/A
UP1-L01-Conference Suite1	-	1.5	-	-	-	-	-	-	-	-	N/A
UP1-L01-Female WC	-	-	0.4	-	-	-	-	-	-	-	N/A
UP1-L01-Lobby Stairs E	-	1.5	-	-	-	-	-	-	-	-	N/A
UP1-L01-Office S	-	1.5	-	-	-	-	-	-	-	-	N/A
UP1-L01-Secondary Goods Lift Lobby	-	1.9	-	-	-	-	-	-	-	-	N/A
UP1-L01-Stair E	-	1.5	-	-	-	-	-	-	-	-	N/A
UP1-L01-Store	-	1.9	-	-	-	-	-	-	-	-	N/A
UP1-L01-Store W	-	1.9	-	-	-	-	-	-	-	-	N/A
UP1-L02-Catcher DH2	-	1.9	-	-	-	-	-	-	-	-	N/A
UP1-L02-Catcher DH5	-	1.9	-	-	-	-	-	-	-	-	N/A
UP1-L02-Catcher DH5	-	1.9	-	-	-	-	-	-	-	-	N/A
UP1-L02-D.WC E	-	-	0.4	-	-	-	-	-	-	-	N/A
UP1-L02-Lobby E	-	1.5	-	-	-	-	-	-	-	-	N/A
UP1-L02-Office N	-	1.5	-	-	-	-	-	-	-	-	N/A
UP1-L02-Office S	-	1.5	-	-	-	-	-	-	-	-	N/A
UP1-L02-Stair E	-	1.5	-	-	-	-	-	-	-	-	N/A
UP1-L02--Stair W	-	1.9	-	-	-	-	-	-	-	-	N/A
UP1-L02-Store N	-	1.9	-	-	-	-	-	-	-	-	N/A
UP1-L02-Store S	-	1.9	-	-	-	-	-	-	-	-	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
UP1-L03-Catcher DH3	-	1.9	-	-	-	-	-	-	-	-	N/A
UP1-L03-Catcher DH6	-	1.9	-	-	-	-	-	-	-	-	N/A
UP1-L03-D.WC	-	-	0.4	-	-	-	-	-	-	-	N/A
UP1-L03-Office N	-	1.5	-	-	-	-	-	-	-	-	N/A
UP1-L03-Office S	-	1.5	-	-	-	-	-	-	-	-	N/A
UP1-L03-Stair E	-	1.5	-	-	-	-	-	-	-	-	N/A
UP1-L03-Stair W	-	1.9	-	-	-	-	-	-	-	-	N/A
UP1-L03-Store N	-	1.9	-	-	-	-	-	-	-	-	N/A
UP1-L03-Store S	-	1.9	-	-	-	-	-	-	-	-	N/A
UP1-L04-Circulation	-	1.5	-	-	-	-	-	-	-	-	N/A
UP1-L04-Lobby	-	1.5	-	-	-	-	-	-	-	-	N/A
UP1-L04-Stair E	-	1.5	-	-	-	-	-	-	-	-	N/A
UP1-L04-Stair W	-	1.9	-	-	-	-	-	-	-	-	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	
Level 03 Zone S2 - UP1-L04-D.WC	-	-	110	-	33
Level 03 Zone S3 - UP1-L04-WCs Lobby	-	-	110	-	30
Level 04 Zone S1 - UP1-L04-Cleaner	-	110	-	-	7
UP1-L00-BNR 1	-	122	-	-	62
UP1-L00-BNR 2	-	122	-	-	62
UP1-L00-BNR1 Lobby	-	-	122	-	36
UP1-L00-BNR2 Lobby	-	-	122	-	36
UP1-L00-Breakout	-	60	-	-	625
UP1-L00-Catcher1	-	122	-	-	104
UP1-L00-Catcher2	-	122	-	-	97
UP1-L00-Circulation1	-	-	122	-	176
UP1-L00-Circulation1 E	-	-	122	-	78
UP1-L00-Circulation1 W	-	-	121	-	131
UP1-L00-Circulation2	-	-	122	-	126
UP1-L00-Circulation2 E	-	-	122	-	124
UP1-L00-Circulation2 W	-	-	121	-	129
UP1-L00-Circulation3	-	-	122	-	170
UP1-L00-Circulation3 E	-	-	122	-	112
UP1-L00-Circulation4	-	-	122	-	90
UP1-L00-Circulation5	-	-	122	-	92
UP1-L00-Circulation6	-	-	122	-	162
UP1-L00-Circulation7	-	-	123	-	167
UP1-L00-Circulation8	-	-	122	-	124
UP1-L00-Circulation9	-	-	122	-	103
UP1-L00-Cleaners	-	60	-	-	18
UP1-L00-Conference Room	-	60	-	-	509

General lighting and display lighting		Luminous efficacy [lm/W]			General lighting [W]
Zone name		Luminaire	Lamp	Display lamp	
	Standard value	60	60	22	
UP1-L00-Cupboard1		73	-	-	5
UP1-L00-Cupboard1		73	-	-	5
UP1-L00-Cupboard3		73	-	-	10
UP1-L00-Cupboard4		73	-	-	6
UP1-L00-D.WC2		-	60	-	85
UP1-L00-DHW Plantroom		122	-	-	160
UP1-L00-Electrical Cupboard		122	-	-	22
UP1-L00-Electrical Cupboard A		122	-	-	22
UP1-L00-Faith Room		60	-	-	268
UP1-L00-Fallow Space		122	-	-	133
UP1-L00-Fibre 03		122	-	-	100
UP1-L00-Fibre Room 1		122	-	-	164
UP1-L00-Fibre Room 2		122	-	-	165
UP1-L00-Goods lift Lobby		-	110	-	85
UP1-L00-IDF		60	-	-	150
UP1-L00-Loading Bay1		110	-	-	78
UP1-L00-Loading Bay2		110	-	-	28
UP1-L00-Lobby		-	60	-	72
UP1-L00-Lobby1		-	60	-	86
UP1-L00-Male WC		-	60	-	215
UP1-L00-Office		60	-	-	1140
UP1-L00-Plant Room		122	-	-	203
UP1-L00-Reception		-	60	110	629
UP1-L00-Secondary Goods Lift Lobby		-	110	-	53
UP1-L00-Shaft WIP		-	60	-	10
UP1-L00-Shower Room		-	60	-	40
UP1-L00-SOC security Office		110	-	-	220
UP1-L00-SOC Security Office		110	-	-	188
UP1-L00-SOC Security Office		110	-	-	274
UP1-L00-Sprinkler Tank		122	-	-	517
UP1-L00-Staging Area		110	-	-	71
UP1-L00-Stair1		-	103	-	55
UP1-L00-Stair2		-	105	-	51
UP1-L00-Store1		122	-	-	28
UP1-L00-Store2		122	-	-	34
UP1-L00-Store3		73	-	-	64
UP1-L00-Store4		110	-	-	34
UP1-L00-Switchroom Z1		122	-	-	235
UP1-L00-Switchroom Z2		122	-	-	230
UP1-L00-Switchroom Z3		122	-	-	299
UP1-L00-Switchroom Z4		122	-	-	285
UP1-L00-UPS Catcher 2		122	-	-	37
UP1-L00-UPS Catcher1		122	-	-	37

General lighting and display lighting		Luminous efficacy [lm/W]			General lighting [W]
Zone name		Luminaire	Lamp	Display lamp	
	Standard value	60	60	22	
UP1-L00-UPS NE		122	-	-	30
UP1-L00-UPS NW		122	-	-	47
UP1-L00-UPS SE		122	-	-	43
UP1-L00-UPS SW		122	-	-	46
UP1-L00-Water Storage Tank 1		122	-	-	443
UP1-L00-Water Storage Tank 2		122	-	-	442
UP1-L00-Water Treatment Plant		122	-	-	520
UP1-L01-0124-Stair		-	103	-	54
UP1-L01-BBU1		123	-	-	42
UP1-L01-BBU2		123	-	-	57
UP1-L01-BBU3		123	-	-	56
UP1-L01-BBU4		123	-	-	56
UP1-L01-Catcher DH1		122	-	-	67
UP1-L01-Catcher DH4		122	-	-	66
UP1-L01-Central Corridor		-	123	-	262
UP1-L01-Circulation E1		-	123	-	120
UP1-L01-Circulation E2		-	123	-	131
UP1-L01-Circulation E3		-	123	-	121
UP1-L01-Circulation W1		-	121	-	100
UP1-L01-Circulation W2		-	121	-	139
UP1-L01-Circulation W3		-	121	-	103
UP1-L01-Circulation1W		-	123	-	48
UP1-L01-Conference Suite1		118	-	-	803
UP1-L01-Data Hall 1		122	-	-	6955
UP1-L01-Data Hall 4		122	-	-	6917
UP1-L01-Female WC		-	110	-	182
UP1-L01-Lobby Stairs E		-	110	-	40
UP1-L01-Lobby W		-	110	-	85
UP1-L01-Office S		118	-	-	805
UP1-L01-Secondary Goods Lift Lobby		-	110	-	59
UP1-L01-Stair E		-	103	-	55
UP1-L01-Store		110	-	-	571
UP1-L01-Store 2		123	-	-	75
UP1-L01-Store W		110	-	-	518
UP1-L01-Store6		123	-	-	56
UP1-L01-Store7		123	-	-	56
UP1-L01-Switchroom DH1		123	-	-	33
UP1-L01-Switchroom DH4		122	-	-	34
UP1-L02-Catcher DH2		122	-	-	67
UP1-L02-Catcher DH5		123	-	-	38
UP1-L02-Catcher DH5		122	-	-	66
UP1-L02-Central Corridor		-	123	-	262
UP1-L02-Circulation 2E		-	123	-	344

General lighting and display lighting		Luminous efficacy [lm/W]			General lighting [W]
Zone name		Luminaire	Lamp	Display lamp	
	Standard value	60	60	22	
UP1-L02-Circulation W		-	123	-	343
UP1-L02-D.WC E		-	110	-	182
UP1-L02-Data Hall 2		122	-	-	6959
UP1-L02-Data Hall 5		122	-	-	6917
UP1-L02-Lobby E		-	110	-	40
UP1-L02-Lobby goods lift		-	110	-	85
UP1-L02-Office N		118	-	-	803
UP1-L02-Office S		118	-	-	805
UP1-L02-Secondary Goods Lift Lobby		-	110	-	59
UP1-L02-Stair E		-	103	-	55
UP1-L02--Stair W		-	103	-	54
UP1-L02-Store 1		123	-	-	75
UP1-L02-Store 2		123	-	-	75
UP1-L02-Store 3		123	-	-	56
UP1-L02-Store 4		123	-	-	56
UP1-L02-Store N		110	-	-	571
UP1-L02-Store S		110	-	-	518
UP1-L02-Switchroom DH2		123	-	-	35
UP1-L02-Switchroom DH2		123	-	-	35
UP1-L02-Switchroom DH5		123	-	-	36
UP1-L03-Catcher DH3		122	-	-	67
UP1-L03-Catcher DH6		122	-	-	66
UP1-L03-Central Corridor		-	123	-	262
UP1-L03-Circulation 2E		-	123	-	236
UP1-L03-Circulation NE		-	123	-	121
UP1-L03-Circulation NW		-	123	-	100
UP1-L03-Circulation W		-	123	-	256
UP1-L03-D.WC		-	110	-	182
UP1-L03-Data Hall 3		122	-	-	6960
UP1-L03-Data Hall 6		122	-	-	6920
UP1-L03-Lobby goods lift		-	110	-	85
UP1-L03-Lobby Stairs E		-	110	-	40
UP1-L03-Office N		118	-	-	803
UP1-L03-Office S		118	-	-	805
UP1-L03-Secondary Goods Lift Lobby		-	110	-	59
UP1-L03-Stair E		-	103	-	55
UP1-L03-Stair W		-	103	-	54
UP1-L03-Store		110	-	-	1
UP1-L03-Store N		110	-	-	571
UP1-L03-Store S		110	-	-	516
UP1-L03-Store1		123	-	-	75
UP1-L03-Store2		123	-	-	75
UP1-L03-Store3		123	-	-	56

General lighting and display lighting	Luminous efficacy [lm/W]			
Zone name	Luminaire	Lamp	Display lamp	General lighting [W]
Standard value	60	60	22	
UP1-L03-Store4	123	-	-	56
UP1-L03-Switchroom DH3	123	-	-	35
UP1-L03-Switchroom DH3	123	-	-	34
UP1-L03-Switchroom DH6	123	-	-	36
UP1-L03-Switchroom DH6	123	-	-	38
UP1-L04-Circulation	-	123	-	60
UP1-L04-external Stair	-	86	-	44
UP1-L04-Lobby	-	110	-	21
UP1-L04-Stair E	-	103	-	31
UP1-L04-Stair W	-	103	-	32

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?
UP1-L00-BNR 1	N/A	N/A
UP1-L00-BNR 2	N/A	N/A
UP1-L00-Breakout	NO (-12.8%)	NO
UP1-L00-Catcher1	N/A	N/A
UP1-L00-Catcher2	N/A	N/A
UP1-L00-Conference Room	NO (-8.3%)	NO
UP1-L00-Faith Room	N/A	N/A
UP1-L00-IDF	N/A	N/A
UP1-L00-Office	NO (-29.8%)	NO
UP1-L00-Reception	NO (-27.5%)	NO
UP1-L00-SOC security Office	N/A	N/A
UP1-L00-SOC Security Office	N/A	N/A
UP1-L00-SOC Security Office	N/A	N/A
UP1-L00-Switchroom Z1	N/A	N/A
UP1-L00-Switchroom Z2	N/A	N/A
UP1-L00-Switchroom Z3	N/A	N/A
UP1-L00-Switchroom Z4	N/A	N/A
UP1-L00-UPS Catcher 2	N/A	N/A
UP1-L00-UPS Catcher1	N/A	N/A
UP1-L00-UPS NE	N/A	N/A
UP1-L00-UPS NW	N/A	N/A
UP1-L00-UPS SE	N/A	N/A
UP1-L00-UPS SW	N/A	N/A
UP1-L01-Catcher DH1	N/A	N/A
UP1-L01-Catcher DH4	N/A	N/A
UP1-L01-Conference Suite1	NO (-23.8%)	NO
UP1-L01-Data Hall 1	N/A	N/A
UP1-L01-Data Hall 4	N/A	N/A
UP1-L01-Office S	NO (-22.6%)	NO
UP1-L01-Store	N/A	N/A

Zone	Solar gain limit exceeded? (%)	Internal blinds used?
UP1-L01-Store W	N/A	N/A
UP1-L01-Switchroom DH1	N/A	N/A
UP1-L01-Switchroom DH4	N/A	N/A
UP1-L02-Catcher DH2	N/A	N/A
UP1-L02-Catcher DH5	N/A	N/A
UP1-L02-Catcher DH5	N/A	N/A
UP1-L02-Data Hall 2	N/A	N/A
UP1-L02-Data Hall 5	N/A	N/A
UP1-L02-Office N	NO (-23.6%)	NO
UP1-L02-Office S	NO (-22.4%)	NO
UP1-L02-Store N	N/A	N/A
UP1-L02-Store S	N/A	N/A
UP1-L02-Switchroom DH2	N/A	N/A
UP1-L02-Switchroom DH2	N/A	N/A
UP1-L02-Switchroom DH5	N/A	N/A
UP1-L03-Catcher DH3	N/A	N/A
UP1-L03-Catcher DH6	N/A	N/A
UP1-L03-Data Hall 3	N/A	N/A
UP1-L03-Data Hall 6	N/A	N/A
UP1-L03-Office N	NO (-23.1%)	NO
UP1-L03-Office S	NO (-21%)	NO
UP1-L03-Store N	N/A	N/A
UP1-L03-Store S	N/A	N/A
UP1-L03-Switchroom DH3	N/A	N/A
UP1-L03-Switchroom DH3	N/A	N/A
UP1-L03-Switchroom DH6	N/A	N/A
UP1-L03-Switchroom DH6	N/A	N/A

Criterion 4: The performance of the building, as built, should be consistent with the calculated BER

Separate submission

Criterion 5: The necessary provisions for enabling energy-efficient operation of the building should be in place

Separate submission

EPBD (Recast): Consideration of alternative energy systems

Were alternative energy systems considered and analysed as part of the design process?	YES
Is evidence of such assessment available as a separate submission?	NO
Are any such measures included in the proposed design?	YES

Technical Data Sheet (Actual vs. Notional Building)

Building Global Parameters

	Actual	Notional
Area [m ²]	15236.2	15236.2
External area [m ²]	14046.9	14046.9
Weather	LON	LON
Infiltration [m ³ /hm ² @ 50Pa]	6	3
Average conductance [W/K]	2551.18	4266.74
Average U-value [W/m ² K]	0.18	0.3
Alpha value* [%]	10.15	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
37	B1 Offices and Workshop businesses
	B2 to B7 General Industrial and Special Industrial Groups
	B8 Storage or Distribution
	C1 Hotels
	C2 Residential Institutions: Hospitals and Care Homes
	C2 Residential Institutions: Residential schools
	C2 Residential Institutions: Universities and colleges
	C2A Secure Residential Institutions
	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
63	Others: Miscellaneous 24hr activities
	Others: Car Parks 24 hrs
	Others: Stand alone utility block

Energy Consumption by End Use [kWh/m²]

	Actual	Notional
Heating	0.74	1.13
Cooling	63.68	522.07
Auxiliary	3.56	1.83
Lighting	30.23	55.72
Hot water	0.71	0.78
Equipment*	2005.84	2005.84
TOTAL **	98.92	581.53

* 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	7.75	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]	7054.74	7128
Primary energy* [kWh/m ²]	300.64	1737.76
Total emissions [kg/m ²]	46.8	294

* 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] Single room cooling system, [HS] Direct or storage electric heater, [HFT] Electricity, [CFT] Electricity										
Actual	0	15419.7	0	130.3	0	0.98	32.88	1	44	
Notional	0	15589.2	0	1142.7	0	0.86	3.79	----	----	
[ST] Other local room heater - unfanned, [HS] Direct or storage electric heater, [HFT] Electricity, [CFT] Electricity										
Actual	24.2	0	8	0	5.1	0.84	0	1	0	
Notional	49.4	0	15.9	0	2	0.86	0	----	----	
[ST] Split or multi-split system, [HS] Heat pump (electric): air source, [HFT] Electricity, [CFT] Electricity										
Actual	53.8	153.5	4.3	9.3	6	3.44	4.57	3.51	6.12	
Notional	45.7	172.3	5	12.6	2.2	2.56	3.79	----	----	
[ST] Split or multi-split system, [HS] Heat pump (electric): air source, [HFT] Electricity, [CFT] Electricity										
Actual	0	2486.9	0	138	15.4	4.08	5.01	4.16	6.7	
Notional	0	2490.2	0	182.5	7.2	2.56	3.79	----	----	
[ST] Split or multi-split system, [HS] Heat pump (electric): air source, [HFT] Electricity, [CFT] Electricity										
Actual	0	2326.6	0	129.1	0	4.16	5.01	4.24	6.7	
Notional	0	2219.5	0	162.7	0	2.56	3.79	----	----	
[ST] Other local room heater - fanned, [HS] Direct or storage electric heater, [HFT] Electricity, [CFT] Electricity										
Actual	2.7	0	0.9	0	1.5	0.8	0	1	0	
Notional	9.4	0	3	0	0.6	0.86	0	----	----	
[ST] Single room cooling system, [HS] Direct or storage electric heater, [HFT] Electricity, [CFT] Electricity										
Actual	0	2037.8	0	17.2	0	0.98	32.88	1	44	
Notional	0	1979	0	145.1	0	0.86	3.79	----	----	
[ST] Other local room heater - unfanned, [HS] Direct or storage electric heater, [HFT] Electricity, [CFT] Electricity										
Actual	2.4	0	0.8	0	8.1	0.84	0	1	0	
Notional	7.3	0	2.4	0	2.6	0.86	0	----	----	
[ST] Other local room heater - unfanned, [HS] Direct or storage electric heater, [HFT] Electricity, [CFT] Electricity										
Actual	44.3	0	14.6	0	23	0.84	0	1	0	
Notional	60.8	0	19.6	0	32.9	0.86	0	----	----	
[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 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	0.2	P1000055:Surf[0]
Floor	0.2	0.08	P1000050:Surf[0]
Roof	0.15	0.05	03000003:Surf[0]
Windows, roof windows, and rooflights	1.5	1.03	P1000081:Surf[2]
Personnel doors	1.5	2.2	P100009E:Surf[0]
Vehicle access & similar large doors	1.5	1.5	P100005A:Surf[0]
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	6.15