

Project name

The Rose of York Development

As designed

Date: Tue Aug 31 13:18:13 2021

Administrative information

Building Details

Address: The Rose of York, Petersham Road, Richmond,
TW10 6UP

Certification tool

Calculation engine: SBEM

Calculation engine version: v5.6.b.0

Interface to calculation engine: DesignBuilder SBEM

Interface to calculation engine version: v6.1.8

BRUKL compliance check version: v5.6.b.0

Certifier details

Name: Steve Williams

Telephone number: 01202 067043

Address: 30 Wentworth Close Bournemouth, Dorset, BH5
2DZCriterion 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	70.1
Target CO ₂ emission rate (TER), kgCO ₂ /m ² .annum	70.1
Building CO ₂ emission rate (BER), kgCO ₂ /m ² .annum	78.2
Are emissions from the building less than or equal to the target?	BER > TER
Are as built details the same as used in the BER calculations?	Separate submission

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

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

Building fabric

Element	U _a -Limit	U _a -Calc	U _i -Calc	Surface where the maximum value occurs*
Wall**	0.35	0.46	1.96	"06. Existing L1 Block - z63-B5 Shwr_P_6"
Floor	0.25	0.45	2.93	"02. Existing - GF Refurb - z19-Stairs Bment_F_3"
Roof	0.25	0.34	0.64	"04. New - Bed 20-27 Block - z46-Bed 21_R_4"
Windows***, roof windows, and rooflights	2.2	3.92	3.92	"03. New - Bed 2-4 Block - z28-Bed 2_G_13"
Personnel doors	2.2	2.2	2.2	"03. New - Bed 2-4 Block - z31-Ent. Hall_D_13"
Vehicle access & similar large doors	1.5	-	-	"No external vehicle access doors"
High usage entrance doors	3.5	-	-	"No external high usage entrance doors"
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	8.2

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- LTHW Wet Rad System @ 92%EER as per Spec

	Heating efficiency	Cooling efficiency	Radiant efficiency	SFP [W/(l/s)]	HR efficiency
This system	0.92	-	-	-	-
Standard value	0.91*	N/A	N/A	N/A	N/A
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.					

2- Mitsubishi City Multi @4.5SCOP/5.5SEER

	Heating efficiency	Cooling efficiency	Radiant efficiency	SFP [W/(l/s)]	HR efficiency
This system	5.5	4.5	-	-	-
Standard value	2.5*	N/A	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.					

1- LTHW Boiler - Spec = 92% BEPA

	Water heating efficiency	Storage loss factor [kWh/litre per day]
This building	0.92	-
Standard value	0.8	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	ID of system type	SFP [W/(l/s)]									HR efficiency	
		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		
03. New - Bed 2-4 Block - z28-Bed 2		-	-	-	0.3	-	-	-	-	-	0.65	0.5
03. New - Bed 2-4 Block - z27-Bed 3		-	-	-	0.3	-	-	-	-	-	0.65	0.5
03. New - Bed 2-4 Block - z26-Bed 4		-	-	-	0.3	-	-	-	-	-	0.65	0.5
03. New - Bed 2-4 Block - z29-Male W		0.3	-	-	-	-	-	-	-	-	-	N/A
03. New - Bed 2-4 Block - z25-B2 Shw		0.3	-	-	-	-	-	-	-	-	-	N/A
03. New - Bed 2-4 Block - z24-B3 Shw		0.3	-	-	-	-	-	-	-	-	-	N/A
03. New - Bed 2-4 Block - z23-B4 Shw		0.3	-	-	-	-	-	-	-	-	-	N/A
02. Existing - GF Refurb - z22-Rest & Bar		-	-	-	0.3	-	-	-	-	-	0.65	0.5

Zone name	SFP [W/(l/s)]									HR efficiency	
	ID of system type	A	B	C	D	E	F	G	H		
Standard value	0.3	1.1	0.5	1.9	1.6	0.5	1.1	0.5	1	Zone	Standard
02. Existing - GF Refurb - z20-Kitchen	0.3	-	-	-	-	-	-	-	-	-	N/A
02. Existing - GF Refurb - z08-Acc.WC	0.3	-	-	-	-	-	-	-	-	-	N/A
02. Existing - GF Refurb - z18-Acc. Bed	-	-	-	0.3	-	-	-	-	-	0.65	0.5
02. Existing - GF Refurb - z16-Staff Kit	0.3	-	-	-	-	-	-	-	-	-	N/A
02. Existing - GF Refurb - z09-Staff B3 Shwr	Shwr	-	-	-	-	-	-	-	-	-	N/A
02. Existing - GF Refurb - z10-Male WC	0.3	-	-	-	-	-	-	-	-	-	N/A
02. Existing - GF Refurb - z11-Fem. WC	0.3	-	-	-	-	-	-	-	-	-	N/A
07. Existing - Refurb Block - z59b-Bed 19	-	-	-	0.3	-	-	-	-	-	0.65	0.5
07. Existing - Refurb Block - z56b-Bed 18	-	-	-	0.3	-	-	-	-	-	0.65	0.5
07. Existing - Refurb Block - z55b-Bed 17	-	-	-	0.3	-	-	-	-	-	0.65	0.5
04. New - Bed 20-27 Block - z46-Bed 21	-	-	-	0.3	-	-	-	-	-	0.65	0.5
04. New - Bed 20-27 Block - z45-B21 Shwr	Shwr	-	-	-	-	-	-	-	-	-	N/A
04. New - Bed 20-27 Block - z38-Bed 22	-	-	-	0.3	-	-	-	-	-	0.65	0.5
04. New - Bed 20-27 Block - z37-B22 Shwr	Shwr	-	-	-	-	-	-	-	-	-	N/A
04. New - Bed 20-27 Block - z36-B23 Shwr	Shwr	-	-	-	-	-	-	-	-	-	N/A
04. New - Bed 20-27 Block - z39-Bed 23	-	-	-	0.3	-	-	-	-	-	0.65	0.5
04. New - Bed 20-27 Block - z40-Bed 24	-	-	-	0.3	-	-	-	-	-	0.65	0.5
04. New - Bed 20-27 Block - z35-B24 Shwr	Shwr	-	-	-	-	-	-	-	-	-	N/A
04. New - Bed 20-27 Block - z34-B25 Shwr	Shwr	-	-	-	-	-	-	-	-	-	N/A
04. New - Bed 20-27 Block - z41-Bed 25	-	-	-	0.3	-	-	-	-	-	0.65	0.5
04. New - Bed 20-27 Block - z42-Bed 26	-	-	-	0.3	-	-	-	-	-	0.65	0.5
04. New - Bed 20-27 Block - z33-B26 Shwr	Shwr	-	-	-	-	-	-	-	-	-	N/A
04. New - Bed 20-27 Block - z31-B27 Shwr	Shwr	-	-	-	-	-	-	-	-	-	N/A
04. New - Bed 20-27 Block - z43-Bed 27	-	-	-	0.3	-	-	-	-	-	0.65	0.5
04. New - Bed 20-27 Block - z44-B20 Shwr	Shwr	-	-	-	-	-	-	-	-	-	N/A
04. New - Bed 20-27 Block - z32-Bed 20	-	-	-	0.3	-	-	-	-	-	0.65	0.5
06. Existing L1 Block - z63-B5 Shwr	0.3	-	-	-	-	-	-	-	-	-	N/A
06. Existing L1 Block - z73-Circulation	-	-	-	0.3	-	-	-	-	-	0.65	0.5
06. Existing L1 Block - z65-Bed 5	-	-	-	0.3	-	-	-	-	-	0.65	0.5
06. Existing L1 Block - z72-Bed 6	-	-	-	0.3	-	-	-	-	-	0.65	0.5
06. Existing L1 Block - z66-B6 Shwr	0.3	-	-	-	-	-	-	-	-	-	N/A
06. Existing L1 Block - z71-B7 Shwr	0.3	-	-	-	-	-	-	-	-	-	N/A
06. Existing L1 Block - z67-Bed 7	-	-	-	0.3	-	-	-	-	-	0.65	0.5
06. Existing L1 Block - z70-Bed 8	-	-	-	0.3	-	-	-	-	-	0.65	0.5
06. Existing L1 Block - z68-B8 Shwr	0.3	-	-	-	-	-	-	-	-	-	N/A
06. Existing L1 Block - z69-Bed 9	-	-	-	0.3	-	-	-	-	-	0.65	0.5
06. Existing L1 Block - z62-B9 Shwr	0.3	-	-	-	-	-	-	-	-	-	N/A
06. Existing L1 Block - z96-Bed 10	-	-	-	0.3	-	-	-	-	-	0.65	0.5
06. Existing L1 Block - z76-Bed 11	-	-	-	0.3	-	-	-	-	-	0.65	0.5
06. Existing L1 Block - z74-B10 Shwr	0.3	-	-	-	-	-	-	-	-	-	N/A
06. Existing L1 Block - z64-B11-Shwr	0.3	-	-	-	-	-	-	-	-	-	N/A
06. Existing L1 Block - z79-Bed 12	-	-	-	0.3	-	-	-	-	-	0.65	0.5
06. Existing L1 Block - z75-B12 Shwr	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	Zone	Standard
	Standard value	0.3	1.1	0.5	1.9	1.6	0.5	1.1	0.5	1		
06. Existing L1 Block - z77-B13 Shwr	0.3	-	-	-	-	-	-	-	-	-	-	N/A
06. Existing L1 Block - z78-Bed 13	-	-	-	0.3	-	-	-	-	-	-	0.65	0.5
06. Existing L1 Block - z83-Staff WC	0.3	-	-	-	-	-	-	-	-	-	-	N/A
06. Existing L1 Block - z84-Staff Shwr	0.3	-	-	-	-	-	-	-	-	-	-	N/A
06. Existing L1 Block - z87-Staff Bath	0.3	-	-	-	-	-	-	-	-	-	-	N/A
06. Existing L1 Block - z88-Staff Bath	0.3	-	-	-	-	-	-	-	-	-	-	N/A
06. Existing L1 Block - z91-Linen	0.3	-	-	-	-	-	-	-	-	-	-	N/A
06. Existing L1 Block - z82-MF Kit.	0.3	-	-	-	-	-	-	-	-	-	-	N/A
06. Existing L1 Block - z95-Staff Kit.	0.3	-	-	-	-	-	-	-	-	-	-	N/A
06. Existing L1 Block - z92-Circulation	-	-	-	0.3	-	-	-	-	-	-	0.65	0.5
05. New - Bed 14-19 Block - z59a-Bed-19	-	-	-	0.3	-	-	-	-	-	-	0.65	0.5
05. New - Bed 14-19 Block - z57a-B19 Shwr	Shwr	-	-	-	-	-	-	-	-	-	-	N/A
05. New - Bed 14-19 Block - z58-B18 Shwr	Shwr	-	-	-	-	-	-	-	-	-	-	N/A
05. New - Bed 14-19 Block - z56a-Bed-18	-	-	-	0.3	-	-	-	-	-	-	0.65	0.5
05. New - Bed 14-19 Block - z55a-Bed-17	-	-	-	0.3	-	-	-	-	-	-	0.65	0.5
05. New - Bed 14-19 Block - z60-B17 Shwr	Shwr	-	-	-	-	-	-	-	-	-	-	N/A
05. New - Bed 14-19 Block - z61-Circulation	-	-	-	0.3	-	-	-	-	-	-	0.65	0.5
05. New - Bed 14-19 Block - z50-B16 Shwr	Shwr	-	-	-	-	-	-	-	-	-	-	N/A
05. New - Bed 14-19 Block - z52-B14 Shwr	Shwr	-	-	-	-	-	-	-	-	-	-	N/A
05. New - Bed 14-19 Block - z54-Bed 14	-	-	-	0.3	-	-	-	-	-	-	0.65	0.5
05. New - Bed 14-19 Block - z53-Bed 15	-	-	-	0.3	-	-	-	-	-	-	0.65	0.5
05. New - Bed 14-19 Block - z51-B15 Shwr	Shwr	-	-	-	-	-	-	-	-	-	-	N/A
05. New - Bed 14-19 Block - z47-Bed 16	-	-	-	0.3	-	-	-	-	-	-	0.65	0.5
02. Existing - GF Refurb - z03-Acc.B.Hall	-	-	-	0.3	-	-	-	-	-	-	0.65	0.5
02. Existing - GF Refurb - z13-Acc.B.Shwr	Shwr	-	-	-	-	-	-	-	-	-	-	N/A

Zone name	Luminous efficacy [lm/W]			General lighting [W]
	Luminaire	Lamp	Display lamp	
Standard value	60	60	22	
03. New - Bed 2-4 Block - z30-WC Lobby	-	257	-	2
03. New - Bed 2-4 Block - z31-Ent. Hall	-	115	-	67
03. New - Bed 2-4 Block - z28-Bed 2	-	123	-	67
03. New - Bed 2-4 Block - z27-Bed 3	-	121	-	65
03. New - Bed 2-4 Block - z26-Bed 4	-	111	-	82
03. New - Bed 2-4 Block - z29-Male WC	-	257	-	4
03. New - Bed 2-4 Block - z25-B2 Shwr	-	241	-	14
03. New - Bed 2-4 Block - z24-B3 Shwr	-	210	-	16
03. New - Bed 2-4 Block - z23-B4 Shwr	-	179	-	19
02. Existing - GF Refurb - z22-Rest & Bar	-	88	15	972
02. Existing - GF Refurb - z21-Bar Lobby	-	197	-	16
02. Existing - GF Refurb - z19-Stairs Bment	-	202	-	29
02. Existing - GF Refurb - z20-Kitchen	-	107	-	512
02. Existing - GF Refurb - z08-Acc.WC	-	238	-	12

General lighting and display lighting Zone name	Luminous efficacy [lm/W]			General lighting [W]
	Luminaire	Lamp	Display lamp	
Standard value	60	60	22	
02. Existing - GF Refurb - z18-Acc. Bed	-	103	-	108
02. Existing - GF Refurb - z17-Ent. Hall	-	122	-	83
02. Existing - GF Refurb - z05-Rec.Office	-	135	15	69
02. Existing - GF Refurb - z06-Lift	-	219	-	13
02. Existing - GF Refurb - z04-Baggage	100	-	-	15
02. Existing - GF Refurb - z14-Staff B4	-	142	-	67
02. Existing - GF Refurb - z16-Staff Kit.	-	185	-	98
02. Existing - GF Refurb - z15-Staff B3	-	132	-	48
02. Existing - GF Refurb - z09-Staff B3Shwr	-	231	-	12
02. Existing - GF Refurb - z10-Male WC	-	136	-	73
02. Existing - GF Refurb - z11-Fem. WC	-	124	-	89
02. Existing - GF Refurb - z12-WC Lobby	-	210	-	16
07. Existing - Refurb Block - z59b-Bed 19	-	148	-	27
07. Existing - Refurb Block - z56b-Bed 18	-	147	-	27
07. Existing - Refurb Block - z55b-Bed 17	-	147	-	28
04. New - Bed 20-27 Block - z46-Bed 21	-	111	-	73
04. New - Bed 20-27 Block - z45-B21 Shwr	-	178	-	17
04. New - Bed 20-27 Block - z38-Bed 22	-	101	-	65
04. New - Bed 20-27 Block - z37-B22 Shwr	-	184	-	16
04. New - Bed 20-27 Block - z36-B23 Shwr	-	184	-	16
04. New - Bed 20-27 Block - z39-Bed 23	-	101	-	65
04. New - Bed 20-27 Block - z40-Bed 24	-	103	-	64
04. New - Bed 20-27 Block - z35-B24 Shwr	-	183	-	16
04. New - Bed 20-27 Block - z34-B25 Shwr	-	184	-	16
04. New - Bed 20-27 Block - z41-Bed 25	-	114	-	64
04. New - Bed 20-27 Block - z42-Bed 26	-	113	-	65
04. New - Bed 20-27 Block - z33-B26 Shwr	-	185	-	16
04. New - Bed 20-27 Block - z31-B27 Shwr	-	183	-	16
04. New - Bed 20-27 Block - z43-Bed 27	-	115	-	62
04. New - Bed 20-27 Block - z44-B20 Shwr	-	199	-	16
04. New - Bed 20-27 Block - z32-Bed 20	-	96	-	69
06. Existing L1 Block - z63-B5 Shwr	-	214	-	12
06. Existing L1 Block - z73-Circulation	-	191	-	61
06. Existing L1 Block - z65-Bed 5	-	114	-	59
06. Existing L1 Block - z72-Bed 6	-	119	-	58
06. Existing L1 Block - z66-B6 Shwr	-	200	-	14
06. Existing L1 Block - z71-B7 Shwr	-	201	-	13
06. Existing L1 Block - z67-Bed 7	-	119	-	58
06. Existing L1 Block - z70-Bed 8	-	119	-	58
06. Existing L1 Block - z68-B8 Shwr	-	196	-	14
06. Existing L1 Block - z69-Bed 9	-	180	-	16
06. Existing L1 Block - z62-B9 Shwr	-	118	-	60
06. Existing L1 Block - z96-Bed 10	-	128	-	44

General lighting and display lighting		Luminous efficacy [lm/W]			
Zone name		Luminaire	Lamp	Display lamp	General lighting [W]
	Standard value	60	60	22	
06. Existing L1 Block - z76-Bed 11	-		132	-	41
06. Existing L1 Block - z74-B10 Shwr	-		235	-	10
06. Existing L1 Block - z64-B11-Shwr	-		241	-	10
06. Existing L1 Block - z81-Circulation	-		150	-	98
06. Existing L1 Block - z79-Bed 12	-		133	-	41
06. Existing L1 Block - z75-B12 Shwr	-		238	-	10
06. Existing L1 Block - z77-B13 Shwr	-		238	-	10
06. Existing L1 Block - z78-Bed 13	-		135	-	41
06. Existing L1 Block - z83-Staff WC	-		208	-	31
06. Existing L1 Block - z94-MF Circ	-		138	-	42
06. Existing L1 Block - z84-Staff Shwr	-		170	-	18
06. Existing L1 Block - z85-MF Bed 1	-		100	-	60
06. Existing L1 Block - z87-Staff Bath2	-		105	-	59
06. Existing L1 Block - z88-Staff Bath1	-		135	-	33
06. Existing L1 Block - z80-MF Liv.Rm	-		109	-	100
06. Existing L1 Block - z89-Lift	-		204	-	13
06. Existing L1 Block - z91-Linen		90	-	-	17
06. Existing L1 Block - z82-MF Kit.	-		121	-	141
06. Existing L1 Block - z86-MF Bed 2	-		127	-	48
06. Existing L1 Block - z93-Staff B2	-		133	-	35
06. Existing L1 Block - z95-Staff Kit.	-		169	-	62
06. Existing L1 Block - z92-Circulation	-		124	-	65
05. New - Bed 14-19 Block - z48-Rear Lobby	-		131	-	33
05. New - Bed 14-19 Block - z59a-Bed 19	-		151	-	34
05. New - Bed 14-19 Block - z57a-B19 Shwr	-		195	-	15
05. New - Bed 14-19 Block - z58-B18 Shwr	-		194	-	15
05. New - Bed 14-19 Block - z56a-Bed 18	-		148	-	35
05. New - Bed 14-19 Block - z55a-Bed 17	-		148	-	35
05. New - Bed 14-19 Block - z60-B17 Shwr	-		193	-	15
05. New - Bed 14-19 Block - z61-Circulation	-		151	-	47
05. New - Bed 14-19 Block - z50-B16 Shwr	-		168	-	19
05. New - Bed 14-19 Block - z49-Stairwell	-		116	-	53
05. New - Bed 14-19 Block - z52-B14 Shwr	-		206	-	13
05. New - Bed 14-19 Block - z54-Bed 14	-		123	-	52
05. New - Bed 14-19 Block - z53-Bed 15	-		123	-	52
05. New - Bed 14-19 Block - z51-B15 Shwr	-		213	-	13
05. New - Bed 14-19 Block - z47-Bed 16	-		106	-	75
02. Existing - GF Refurb - z03-Acc.B.Hall	-		189	-	18
02. Existing - GF Refurb - z13-Acc.BShwr	-		156	-	25
01. Basement - z02-Stairwell	-		248	-	17
01. Basement - z01-Basement Store		46	-	-	232
02. Existing - GF Refurb - z07-Riser		129	-	-	11
06. Existing L1 Block - z90-Riser		66	-	-	17

General lighting and display lighting	Luminous efficacy [lm/W]			General lighting [W]	
	Zone name	Luminaire	Lamp		Display lamp
	Standard value	60	60	22	
08. Plant Room - z97-Plant Rm		46	-	-	485

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?
03. New - Bed 2-4 Block - z28-Bed 2	NO (-58.3%)	YES
03. New - Bed 2-4 Block - z27-Bed 3	NO (-58.4%)	YES
03. New - Bed 2-4 Block - z26-Bed 4	NO (-83.2%)	YES
03. New - Bed 2-4 Block - z25-B2 Shwr	N/A	N/A
03. New - Bed 2-4 Block - z24-B3 Shwr	N/A	N/A
03. New - Bed 2-4 Block - z23-B4 Shwr	N/A	N/A
02. Existing - GF Refurb - z22-Rest & Bar	NO (-54.6%)	YES
02. Existing - GF Refurb - z08-Acc.WC	NO (-71.3%)	YES
02. Existing - GF Refurb - z18-Acc. Bed	NO (-59.1%)	YES
02. Existing - GF Refurb - z05-Rec.Office	N/A	N/A
02. Existing - GF Refurb - z14-Staff B4	NO (-77%)	YES
02. Existing - GF Refurb - z15-Staff B3	NO (-78.3%)	YES
02. Existing - GF Refurb - z09-Staff B3Shwr	N/A	N/A
07. Existing - Refurb Block - z59b-Bed 19	NO (-93.2%)	YES
07. Existing - Refurb Block - z56b-Bed 18	NO (-89.3%)	YES
07. Existing - Refurb Block - z55b-Bed 17	NO (-93%)	YES
04. New - Bed 20-27 Block - z46-Bed 21	NO (-67.5%)	YES
04. New - Bed 20-27 Block - z45-B21 Shwr	N/A	N/A
04. New - Bed 20-27 Block - z38-Bed 22	NO (-47.6%)	YES
04. New - Bed 20-27 Block - z37-B22 Shwr	N/A	N/A
04. New - Bed 20-27 Block - z36-B23 Shwr	N/A	N/A
04. New - Bed 20-27 Block - z39-Bed 23	NO (-47.6%)	YES
04. New - Bed 20-27 Block - z40-Bed 24	NO (-58.4%)	YES
04. New - Bed 20-27 Block - z35-B24 Shwr	N/A	N/A
04. New - Bed 20-27 Block - z34-B25 Shwr	N/A	N/A
04. New - Bed 20-27 Block - z41-Bed 25	NO (-46.7%)	YES
04. New - Bed 20-27 Block - z42-Bed 26	NO (-47.4%)	YES
04. New - Bed 20-27 Block - z33-B26 Shwr	N/A	N/A
04. New - Bed 20-27 Block - z31-B27 Shwr	N/A	N/A
04. New - Bed 20-27 Block - z43-Bed 27	NO (-69.3%)	YES
04. New - Bed 20-27 Block - z44-B20 Shwr	N/A	N/A
04. New - Bed 20-27 Block - z32-Bed 20	NO (-44.6%)	YES
06. Existing L1 Block - z63-B5 Shwr	NO (-75.2%)	YES
06. Existing L1 Block - z65-Bed 5	NO (-82.3%)	YES
06. Existing L1 Block - z72-Bed 6	NO (-78.2%)	YES
06. Existing L1 Block - z66-B6 Shwr	N/A	N/A
06. Existing L1 Block - z71-B7 Shwr	N/A	N/A
06. Existing L1 Block - z67-Bed 7	NO (-78.4%)	YES
06. Existing L1 Block - z70-Bed 8	NO (-78.9%)	YES

Zone	Solar gain limit exceeded? (%)	Internal blinds used?
06. Existing L1 Block - z68-B8 Shwr	N/A	N/A
06. Existing L1 Block - z69-Bed 9	N/A	N/A
06. Existing L1 Block - z62-B9 Shwr	NO (-85.9%)	YES
06. Existing L1 Block - z96-Bed 10	NO (-83%)	YES
06. Existing L1 Block - z76-Bed 11	NO (-82.3%)	YES
06. Existing L1 Block - z74-B10 Shwr	N/A	N/A
06. Existing L1 Block - z64-B11-Shwr	N/A	N/A
06. Existing L1 Block - z79-Bed 12	NO (-82.2%)	YES
06. Existing L1 Block - z75-B12 Shwr	N/A	N/A
06. Existing L1 Block - z77-B13 Shwr	N/A	N/A
06. Existing L1 Block - z78-Bed 13	NO (-81%)	YES
06. Existing L1 Block - z85-MF Bed 1	N/A	N/A
06. Existing L1 Block - z80-MF Liv.Rm	NO (-87.6%)	YES
06. Existing L1 Block - z82-MF Kit.	NO (-70.8%)	YES
06. Existing L1 Block - z86-MF Bed 2	NO (-77.3%)	YES
06. Existing L1 Block - z93-Staff B2	NO (-75%)	YES
06. Existing L1 Block - z95-Staff Kit.	N/A	N/A
05. New - Bed 14-19 Block - z59a-Bed 19	N/A	N/A
05. New - Bed 14-19 Block - z57a-B19 Shwr	N/A	N/A
05. New - Bed 14-19 Block - z58-B18 Shwr	N/A	N/A
05. New - Bed 14-19 Block - z56a-Bed 18	N/A	N/A
05. New - Bed 14-19 Block - z55a-Bed 17	N/A	N/A
05. New - Bed 14-19 Block - z60-B17 Shwr	N/A	N/A
05. New - Bed 14-19 Block - z50-B16 Shwr	N/A	N/A
05. New - Bed 14-19 Block - z52-B14 Shwr	N/A	N/A
05. New - Bed 14-19 Block - z54-Bed 14	NO (-84.2%)	YES
05. New - Bed 14-19 Block - z53-Bed 15	NO (-84.2%)	YES
05. New - Bed 14-19 Block - z51-B15 Shwr	N/A	N/A
05. New - Bed 14-19 Block - z47-Bed 16	NO (-93.8%)	YES
02. Existing - GF Refurb - z03-Acc.B.Hall	N/A	N/A
02. Existing - GF Refurb - z13-Acc.BShwr	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]	1335.4	1335.4
External area [m ²]	3176.2	3176.2
Weather	LON	LON
Infiltration [m ³ /hm ² @ 50Pa]	8	3
Average conductance [W/K]	1972.16	1328.37
Average U-value [W/m ² K]	0.62	0.42
Alpha value* [%]	9.94	16.86

* 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

95 C1 Hotels

C2 Residential Institutions: Hospitals and Care Homes
 C2 Residential Institutions: Residential schools
 C2 Residential Institutions: Universities and colleges
 C2A Secure Residential Institutions

5 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	96.51	59.89
Cooling	0	0.04
Auxiliary	9.22	10.62
Lighting	24.71	18.59
Hot water	183.95	195.76
Equipment*	48.63	48.63
TOTAL**	314.39	284.89

* 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]	419.66	334.74
Primary energy* [kWh/m ²]	446.63	400.04
Total emissions [kg/m ²]	78.2	70.1

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

HVAC Systems Performance

System Type	Heat dem MJ/m ²	Cool dem MJ/m ²	Heat con kWh/m ²	Cool con kWh/m ²	Aux con kWh/m ²	Heat SSEFF	Cool SSEER	Heat gen SEFF	Cool gen SEER
[ST] Central heating using water: radiators, [HS] LTHW boiler, [HFT] Natural Gas, [CFT] Natural Gas									
Actual	340.6	81.2	109.5	0	10.4	0.86	0	0.92	0
Notional	199.5	158	67.7	0	11.9	0.82	0	----	----
[ST] Split or multi-split system, [HS] Heat pump (electric): air source, [HFT] Electricity, [CFT] Electricity									
Actual	333.2	1.8	18.1	0.1	11.2	5.13	3.91	5.5	5.5
Notional	333.5	59.3	38.1	4.6	16.3	2.43	3.6	----	----
[ST] No Heating or Cooling									
Actual	409.1	0.7	0	0	0	0	0	0	0
Notional	144.4	5	0	0	0	0	0	----	----

Key to terms

Heat dem [MJ/m ²]	= Heating energy demand
Cool dem [MJ/m ²]	= Cooling energy demand
Heat con [kWh/m ²]	= Heating energy consumption
Cool con [kWh/m ²]	= Cooling energy consumption
Aux con [kWh/m ²]	= 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	0.26	"03. New - Bed 2-4 Block - z30-WC Lobby_W_9"
Floor	0.2	0.08	"06. Existing L1 Block - z94-MF Circ_S_4"
Roof	0.15	0.16	"03. New - Bed 2-4 Block - z30-WC Lobby_R_5"
Windows, roof windows, and rooflights	1.5	3.92	"03. New - Bed 2-4 Block - z28-Bed 2_G_13"
Personnel doors	1.5	2.2	"03. New - Bed 2-4 Block - z31-Ent. Hall_D_13"
Vehicle access & similar large doors	1.5	-	"No external vehicle access doors"
High usage entrance doors	1.5	-	"No external high usage entrance doors"
U _{i-Typ} = Typical individual element U-values [W/(m ² K)]		U _{i-Min} = Minimum individual element U-values [W/(m ² K)]	
* There might be more than one surface where the minimum U-value occurs.			

Air Permeability	Typical value	This building
m ³ /(h.m ²) at 50 Pa	5	8.2