

Project name

NHSBTU STAGE 2

As designed

Date: Mon Aug 28 16:58:14 2017

Administrative information

Building Details

Address: Address 1, City, Postcode

Certification tool

Calculation engine: Apache

Calculation engine version: 7.0.7

Interface to calculation engine: IES Virtual Environment

Interface to calculation engine version: 7.0.7

BRUKL compliance check version: v5.3.a.0

Owner Details

Name: Name

Telephone number: Phone

Address: Street Address, City, Postcode

Certifier details

Name: Name

Telephone number: Phone

Address: Street Address, City, Postcode

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	36.7
Target CO ₂ emission rate (TER), kgCO ₂ /m ² .annum	36.7
Building CO ₂ emission rate (BER), kgCO ₂ /m ² .annum	17.1
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	0.19	0.19	CR000000:Surf[7]
Floor	0.25	0.16	0.16	CR000000:Surf[0]
Roof	0.25	0.13	0.13	D_00000A:Surf[0]
Windows***, roof windows, and rooflights	2.2	1.2	1.2	CR000000: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	4

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- VRF + Mech Supply & Extract

	Heating efficiency	Cooling efficiency	Radiant efficiency	SFP [W/(l/s)]	HR efficiency
This system	5.6	5.6	0	0	0.75
Standard value	2.5*	3.2	N/A	N/A	0.5
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.					

2- Constant Air Volume

	Heating efficiency	Cooling efficiency	Radiant efficiency	SFP [W/(l/s)]	HR efficiency
This system	0.95	4.3	0	3	0.75
Standard value	0.91*	2.6	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.					

3- Radiators + Natural Ventilation

	Heating efficiency	Cooling efficiency	Radiant efficiency	SFP [W/(l/s)]	HR efficiency
This system	0.95	-	0.2	0	-
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.					

4- Radiators + Mech Supply & Extract

	Heating efficiency	Cooling efficiency	Radiant efficiency	SFP [W/(l/s)]	HR efficiency
This system	0.95	-	0.2	0	0.75
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					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.					

5- Radiators + Mech Extract

	Heating efficiency	Cooling efficiency	Radiant efficiency	SFP [W/(l/s)]	HR efficiency
This system	0.95	-	0.2	0	-
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.					

"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
CMT-31 Cryo Room	-	0.3	0	-	-	-	-	-	-	-	-	N/A
HS-10 Cold Room	-	0.3	0	-	-	-	-	-	-	-	-	N/A
HS-09 Cold Room	-	0.3	0	-	-	-	-	-	-	-	-	N/A
HS-08 Cold Room	-	0.3	0	-	-	-	-	-	-	-	-	N/A
GNF-06 Meeting Room	-	-	-	0.3	-	-	-	-	-	-	-	N/A
GNF-03 Meeting Room	-	-	-	0.3	-	-	-	-	-	-	-	N/A
HI-04 Solid Organ	-	0.3	0	-	-	-	-	-	-	-	-	N/A
HI-03 HSCT Co-ord	-	0.3	0	-	-	-	-	-	-	-	-	N/A
HI-21 PCR Reporting	-	0.3	0	-	-	-	-	-	-	-	-	N/A
HI-22 PCR Reporting	-	0.3	0	-	-	-	-	-	-	-	-	N/A
HI-14 Reporting	-	0.3	0	-	-	-	-	-	-	-	-	N/A
HI-15 Sample Receipt	-	0.3	0	-	-	-	-	-	-	-	-	N/A
HI-16 Freezer Room	-	0.3	0	-	-	-	-	-	-	-	-	N/A
HI-01 Pre PCR	-	0.3	0	-	-	-	-	-	-	-	-	N/A
GNF-11 Meeting Room	-	-	-	0.3	-	-	-	-	-	-	-	N/A
GNG-13 Tissues Recirc	-	-	-	0.3	-	-	-	-	-	-	-	N/A
GNG-15 Tissues Lab	-	-	-	0.3	-	-	-	-	-	-	-	N/A
GNG-14 Tissues Lab	-	-	-	0.3	-	-	-	-	-	-	-	N/A
GNG-08 Reception	-	-	-	0.3	-	-	-	-	-	-	-	N/A
GNG-09 Estates	-	-	-	0.3	-	-	-	-	-	-	-	N/A
CMT-32 Lab Management	-	0.3	0	-	-	-	-	-	-	-	-	N/A
CMT-02 Reporting & Office	-	0.3	0	-	-	-	-	-	-	-	-	N/A
CMT-03 Staff in / out	-	0.3	0	-	-	-	-	-	-	-	-	N/A
CMT-04 Products in	-	0.3	0	-	-	-	-	-	-	-	-	N/A
CMT-33 Handwash / Lab Coats	-	0.3	0	-	-	-	-	-	-	-	-	N/A
CMT-05 Dev Lab	-	0.3	0	-	-	-	-	-	-	-	-	N/A
CMT-06 Storage	-	0.3	0	-	-	-	-	-	-	-	-	N/A
CMT-01 Lab	-	0.3	0	-	-	-	-	-	-	-	-	N/A
CMT-07 Monitoring	-	0.3	0	-	-	-	-	-	-	-	-	N/A
GNF-09 Meeting Room	-	-	-	0.3	-	-	-	-	-	-	-	N/A
HI-07 Senior Line Managers	-	0.3	0	-	-	-	-	-	-	-	-	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
HI-06 HOL	-	0.3	0	-	-	-	-	-	-	-	N/A
HI-08 PA Support	-	0.3	0	-	-	-	-	-	-	-	N/A
HI-10 MFS	-	0.3	0	-	-	-	-	-	-	-	N/A
HI-09 HLA Selected Platelets	-	0.3	0	-	-	-	-	-	-	-	N/A
HI-20 Antibody Rep	-	0.3	0	-	-	-	-	-	-	-	N/A
HI-05 Antibody Lab	-	0.3	0	-	-	-	-	-	-	-	N/A
HI-19 Antibody Rep	-	0.3	0	-	-	-	-	-	-	-	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	
CMT-31 Cryo Room		40	-	-	1674
CMT-25 D		94	-	-	31
CMT-26 D		94	-	-	31
CMT-28 D		102	-	-	27
CMT-18 B		73	-	-	52
CMT-16 D		91	-	-	32
CMT-13 C		73	-	-	52
CMT-10 C		73	-	-	52
CMT-30 C		73	-	-	52
CMT-22 C		72	-	-	54
CMT-23 B		73	-	-	52
CMT-29 B		72	-	-	54
CMT-14 B		73	-	-	52
CMT-19 Clean Rm 4		45	-	-	281
CMT-12 Clean Rm 3		45	-	-	284
CMT-24 Clean Rm 5		44	-	-	307
CMT-27 Clean Rm 1		47	-	-	242
CMT-15 Clean Rm 2		47	-	-	241
Circulation		-	66	-	221
Circulation		-	63	-	788
GNG-22 Break Area		-	59	-	570
GNG-16 Consumables		43	-	-	76
GNG-17 Warehouse		42	-	-	102
GNG-10 Post		48	-	-	32
GNG-11 Store		44	-	-	55
GNG-12 OH		47	-	-	34
GNG-24 WC		-	64	-	277
HS-10 Cold Room		43	-	-	439
HS-09 Cold Room		43	-	-	433
HS-08 Cold Room		43	-	-	433
HS-07 Goods Out		49	-	-	27
HS-06 Goods In		50	-	-	26

General lighting and display lighting		Luminous efficacy [lm/W]			General lighting [W]
Zone name		Luminaire	Lamp	Display lamp	
	Standard value	60	60	22	
HS-13 Management (Small)		50	-	-	200
Lift		54	-	-	144
Stair 1		-	66	-	127
Stair 2		-	67	-	125
Stair 3		-	66	-	129
GNF-19 Canteen		-	58	-	1488
GNF-05 Meeting Room		50	-	-	259
GNF-06 Meeting Room		57	-	-	157
Store		46	-	-	46
GNF-03 Meeting Room		53	-	-	189
GNF-04 Meeting Room		48	-	-	326
HI-04 Solid Organ		44	-	-	458
HI-03 HSCT Co-ord		44	-	-	447
HI-21 PCR Reporting		63	-	-	125
HI-22 PCR Reporting		65	-	-	112
HI-14 Reporting		42	-	-	959
HI-15 Sample Receipt		45	-	-	515
HI-16 Freezer Room		45	-	-	503
HI-01 Pre PCR		41	-	-	910
HI-02 Post PCR		42	-	-	1091
GNF-11 Meeting Room		50	-	-	255
GNF-10 Meeting Room		56	-	-	167
GNF-15 Acc WC / Sh		-	94	-	74
GNF-14 WC		-	67	-	269
WC		-	107	-	58
GNF-16 WC		-	67	-	269
GNF-18 Acc WC/Sh		-	94	-	73
GNF-17 Acc WC		-	120	-	47
GNF-28 ODT Offices		40	-	-	1778
Void		52	-	-	216
GNF-24 Managers Office		57	-	-	19
Void		83	-	-	119
Void		40	-	-	2209
GNF-20 Kitchen		-	68	-	131
Circulation		-	101	-	42
Circulation		-	68	-	332
GNF-02 Circulation		-	63	-	627
Circulation		-	64	-	488
GNF-41 Circulation		-	70	-	98
Circulation		-	68	-	497
Void		95	-	-	83
Stair 1		-	69	-	127
Stair 2		-	69	-	130

General lighting and display lighting		Luminous efficacy [lm/W]			General lighting [W]
Zone name		Luminaire	Lamp	Display lamp	
	Standard value	60	60	22	
Stair 3		-	68	-	136
GNG-23 WC		44	-	-	307
CMT-11 B		73	-	-	52
CMT-09 D		73	-	-	52
B		64	-	-	69
B		64	-	-	69
D		62	-	-	73
GNG-13 Tissues Recirc		64	-	-	69
GNG-15 Tissues Lab		43	-	-	485
GNG-14 Tissues Lab		42	-	-	493
GNG-08 Reception		42	-	-	809
GNG-09 Estates		41	-	-	1237
GNG-06 Acc WC		-	105	-	48
GNG-07 Acc Sh		-	89	-	67
GNG-05 Store		60	-	-	13
GNG-04 Cleaner		47	-	-	33
GNG-03 Training Room		42	-	-	827
RCI-07 Freezer Room		47	-	-	136
RCI-10 Store		50	-	-	214
RCI-09 Reporting Cell		47	-	-	274
RCI-03 - Clerical Office		44	-	-	471
RCI-02 HoRCI & PIM		47	-	-	264
RCI-11 HoL & RLM		49	-	-	229
RCI-05 Handwash & Lab Coat		50	-	-	195
RCI-04 Lobby / Change		51	-	-	180
RCI-08 Sample Receipt		45	-	-	337
RCI-01 Lab		40	-	-	3099
RCI-06 Cold Room		52	-	-	23
Circulation		-	64	-	424
Circulation		-	66	-	247
GNG-25 Store		63	-	-	12
HS-13 Management Office		44	-	-	487
HS-14 Staff Lobby		-	74	-	61
HS-15 Hand Wash		50	-	-	25
HS-12 Incubator Room		42	-	-	707
HS-11 Equipment Room		46	-	-	39
HS-02 Freezer Room		40	-	-	1847
HS-05 Pod Room		50	-	-	249
HS-03 Session Bonding		41	-	-	1331
HS-01 Lab		40	-	-	4273
HS-04 Session Cons		43	-	-	546
GNG-20 Transport Office		49	-	-	240
GNG-18 Drivers RM & Lockers		42	-	-	619

General lighting and display lighting		Luminous efficacy [lm/W]			General lighting [W]
Zone name		Luminaire	Lamp	Display lamp	
	Standard value	60	60	22	
GNG-19 Transport Circ		-	97	-	42
GNG-21 TLM		47	-	-	293
Circulation		-	66	-	356
Circulation		-	66	-	215
CMT-32 Lab Management		49	-	-	234
CMT-02 Reporting & Office		42	-	-	1006
CMT-03 Staff in / out		57	-	-	125
CMT-04 Products in		53	-	-	148
CMT-33 Handwash / Lab Coats		53	-	-	122
CMT-05 Dev Lab		42	-	-	520
CMT-06 Storage		49	-	-	184
CMT-01 Lab		41	-	-	1853
CMT-07 Monitoring		50	-	-	150
CMT-17 C		73	-	-	52
CMT-20 D		71	-	-	53
CMT-21 D		71	-	-	53
CMT-08 Clean Rm Access		49	-	-	739
Lift		120	-	-	58
GNC-02 Entrance & Waiting		-	63	-	728
Stairs		-	126	-	61
GNF-35 Circulation		64	-	-	129
GNF-08 Meeting Room		49	-	-	280
GNF-09 Meeting Room		54	-	-	188
GNF-01 Open Plan Office		39	-	-	13098
GNF-26 ICT Build		53	-	-	202
GNF-25 Server		48	-	-	162
GNF-44 ICT Meeting		50	-	-	249
GNF-43 ICT Meeting		50	-	-	249
GNF-27 ICT		40	-	-	3212
GNF-33 Meeting Room 1		40	-	-	1611
GNF-29 Meeting Room 4		44	-	-	607
GNF-32 Store		44	-	-	77
GNF-31 Meeting Room 2		46	-	-	371
GNF-30 Meeting Room 3		47	-	-	360
HI-07 Senior Line Managers		46	-	-	308
HI-06 HOL		58	-	-	131
HI-08 PA Support		49	-	-	222
HI-10 MFS		43	-	-	504
HI-09 HLA Selected Platelets		46	-	-	289
HI-22 Staff Lobby / Cloaks		-	75	-	101
H&I Circulation		-	73	-	222
HI-11 Circ		-	76	-	128
HI-20 Antibody Rep		69	-	-	70

General lighting and display lighting		Luminous efficacy [lm/W]		
Zone name		Luminaire	Lamp	Display lamp
	Standard value	60	60	22
HI-05 Antibody Lab		41	-	-
HI-19 Antibody Rep		69	-	-
GNF-13 Plant Room		45	-	-
GNF-21 Cold Store		77	-	-
GNF-22 Dry Store		75	-	-
				General lighting [W]
				1180
				70
				234
				9
				10

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?
CMT-31 Cryo Room	NO (-76.5%)	NO
CMT-25 D	N/A	N/A
CMT-26 D	N/A	N/A
CMT-28 D	N/A	N/A
CMT-18 B	N/A	N/A
CMT-16 D	N/A	N/A
CMT-13 C	N/A	N/A
CMT-10 C	N/A	N/A
CMT-30 C	N/A	N/A
CMT-22 C	N/A	N/A
CMT-23 B	N/A	N/A
CMT-29 B	N/A	N/A
CMT-14 B	N/A	N/A
CMT-19 Clean Rm 4	N/A	N/A
CMT-12 Clean Rm 3	N/A	N/A
CMT-24 Clean Rm 5	N/A	N/A
CMT-27 Clean Rm 1	N/A	N/A
CMT-15 Clean Rm 2	N/A	N/A
GNG-22 Break Area	N/A	N/A
HS-10 Cold Room	N/A	N/A
HS-09 Cold Room	N/A	N/A
HS-08 Cold Room	N/A	N/A
HS-07 Goods Out	NO (-30.9%)	NO
HS-06 Goods In	NO (-29.2%)	NO
HS-13 Management (Small)	N/A	N/A
Lift	N/A	N/A
GNF-19 Canteen	N/A	N/A
GNF-05 Meeting Room	NO (-16.4%)	NO
GNF-06 Meeting Room	N/A	N/A
GNF-03 Meeting Room	N/A	N/A
GNF-04 Meeting Room	NO (-42.2%)	NO
HI-04 Solid Organ	NO (-57%)	NO
HI-03 HSCT Co-ord	NO (-56%)	NO
HI-21 PCR Reporting	N/A	N/A
HI-22 PCR Reporting	N/A	N/A

Zone	Solar gain limit exceeded? (%)	Internal blinds used?
HI-14 Reporting	N/A	N/A
HI-15 Sample Receipt	N/A	N/A
HI-16 Freezer Room	N/A	N/A
HI-01 Pre PCR	N/A	N/A
HI-02 Post PCR	NO (-31.8%)	NO
GNF-11 Meeting Room	N/A	N/A
GNF-10 Meeting Room	NO (-21.1%)	NO
GNF-28 ODT Offices	NO (-41.5%)	NO
Void	N/A	N/A
Void	N/A	N/A
Void	NO (-22.7%)	NO
Void	N/A	N/A
GNG-23 WC	N/A	N/A
CMT-11 B	N/A	N/A
CMT-09 D	N/A	N/A
B	N/A	N/A
B	N/A	N/A
D	N/A	N/A
GNG-13 Tissues Recirc	N/A	N/A
GNG-15 Tissues Lab	NO (-58.2%)	NO
GNG-14 Tissues Lab	NO (-4.6%)	NO
GNG-08 Reception	N/A	N/A
GNG-09 Estates	NO (-54.3%)	NO
GNG-03 Training Room	NO (-54%)	NO
RCI-07 Freezer Room	N/A	N/A
RCI-10 Store	N/A	N/A
RCI-09 Reporting Cell	N/A	N/A
RCI-03 - Clerical Office	NO (-61.5%)	NO
RCI-02 HoRCI & PIM	N/A	N/A
RCI-11 HoL & RLM	NO (-68.8%)	NO
RCI-05 Handwash & Lab Coat	N/A	N/A
RCI-04 Lobby / Change	N/A	N/A
RCI-08 Sample Receipt	N/A	N/A
RCI-01 Lab	NO (-67.7%)	NO
RCI-06 Cold Room	N/A	N/A
GNG-25 Store	N/A	N/A
HS-13 Management Office	N/A	N/A
HS-14 Staff Lobby	N/A	N/A
HS-15 Hand Wash	N/A	N/A
HS-12 Incubator Room	N/A	N/A
HS-11 Equipment Room	N/A	N/A
HS-02 Freezer Room	N/A	N/A
HS-05 Pod Room	N/A	N/A
HS-03 Session Bonding	N/A	N/A
HS-01 Lab	NO (-80.1%)	NO
HS-04 Session Cons	N/A	N/A
GNG-20 Transport Office	N/A	N/A
GNG-18 Drivers RM & Lockers	N/A	N/A
GNG-21 TLM	N/A	N/A

Zone	Solar gain limit exceeded? (%)	Internal blinds used?
CMT-32 Lab Management	N/A	N/A
CMT-02 Reporting & Office	N/A	N/A
CMT-03 Staff in / out	N/A	N/A
CMT-04 Products in	N/A	N/A
CMT-33 Handwash / Lab Coats	N/A	N/A
CMT-05 Dev Lab	N/A	N/A
CMT-06 Storage	N/A	N/A
CMT-01 Lab	NO (-57.5%)	NO
CMT-07 Monitoring	N/A	N/A
CMT-17 C	N/A	N/A
CMT-20 D	N/A	N/A
CMT-21 D	N/A	N/A
CMT-08 Clean Rm Access	N/A	N/A
Lift	N/A	N/A
GNF-35 Circulation	N/A	N/A
GNF-08 Meeting Room	NO (-25.7%)	NO
GNF-09 Meeting Room	N/A	N/A
GNF-01 Open Plan Office	NO (-47.9%)	NO
GNF-26 ICT Build	NO (-40.7%)	NO
GNF-44 ICT Meeting	NO (-52.5%)	NO
GNF-43 ICT Meeting	N/A	N/A
GNF-27 ICT	NO (-65%)	NO
GNF-33 Meeting Room 1	N/A	N/A
GNF-29 Meeting Room 4	N/A	N/A
GNF-31 Meeting Room 2	N/A	N/A
GNF-30 Meeting Room 3	N/A	N/A
HI-07 Senior Line Managers	YES (+94.5%)	NO
HI-06 HOL	YES (+62.4%)	NO
HI-08 PA Support	NO (-4.2%)	NO
HI-10 MFS	NO (-57.8%)	NO
HI-09 HLA Selected Platelets	NO (-26.3%)	NO
HI-22 Staff Lobby / Cloaks	N/A	N/A
H&I Circulation	N/A	N/A
HI-11 Circ	N/A	N/A
HI-20 Antibody Rep	N/A	N/A
HI-05 Antibody Lab	NO (-61.1%)	NO
HI-19 Antibody Rep	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?	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]	6917.9	6917.9
External area [m ²]	9746.6	9746.6
Weather	LEE	LEE
Infiltration [m ³ /hm ² @ 50Pa]	4	5
Average conductance [W/K]	2141.55	0
Average U-value [W/m ² K]	0.22	0
Alpha value* [%]	12.84	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
100	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
	Others: Miscellaneous 24hr activities
	Others: Car Parks 24 hrs
	Others: Stand alone utility block

Energy Consumption by End Use [kWh/m²]

	Actual	Notional
Heating	22.05	40.02
Cooling	0.62	0.46
Auxiliary	10.1	11.26
Lighting	37.14	30.27
Hot water	14.11	10.57
Equipment*	38.15	38.15
TOTAL **	84.01	92.57

* 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/m²]

	Actual	Notional
Photovoltaic systems	32.46	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]	192.99	226.57
Primary energy* [kWh/m ²]	219.38	262.46
Total emissions [kg/m ²]	17.1	36.7

* 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 SSEFF	Cool SSEER	Heat gen SEFF	Cool gen SEER	
[ST] Central heating using water: radiators, [HS] LTHW boiler, [HFT] Natural Gas, [CFT] Electricity										
Actual	80.7	0	25.1	0	3.2	0.89	0	0.95	0	
Notional	37.4	3.1	12.1	0.2	92.7	0.86	3.79	----	----	
[ST] Central heating using water: radiators, [HS] LTHW boiler, [HFT] Natural Gas, [CFT] Electricity										
Actual	68.2	0	21.2	0	4.2	0.89	0	0.95	0	
Notional	128.5	0	41.4	0	1.6	0.88	0	----	----	
[ST] Split or multi-split system, [HS] Heat pump (electric): air source, [HFT] Electricity, [CFT] Electricity										
Actual	354.5	28.8	17.9	1.6	5.5	5.49	5	5.6	5.6	
Notional	97.6	0	31.5	0	5.5	0.86	0	----	----	
[ST] Central heating using water: radiators, [HS] LTHW boiler, [HFT] Natural Gas, [CFT] Electricity										
Actual	156.9	0	48.8	0	4.7	0.89	0	0.95	0	
Notional	387.2	16.3	42.1	1.2	16.2	2.56	3.79	----	----	
[ST] Constant volume system (variable fresh air rate), [HS] LTHW boiler, [HFT] Natural Gas, [CFT] Electricity										
Actual	4.8	4.8	1.3	0.7	156.3	0.99	1.89	0.95	4.3	
Notional	196.7	0	63.4	0	5.4	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	0.19	CR000000:Surf[7]
Floor	0.2	0.16	CR000000:Surf[0]
Roof	0.15	0.13	D_00000A:Surf[0]
Windows, roof windows, and rooflights	1.5	1.2	CR000000: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-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	4