

Project name

Prospect House IES

As built

Date: Thu Feb 17 12:03:35 2022

Administrative information

Building Details

Address: Prospect House School, MANCHESTER, M9 8LT

Certification tool

Calculation engine: Apache

Calculation engine version: 7.0.13

Interface to calculation engine: IES Virtual Environment

Interface to calculation engine version: 7.0.13

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

Certifier details

Name: Benjamin Byrom

Telephone number: 0151 728 3360

Address: Hurstwood Environmental Consulting, 23
Goodlass Road, Speke, Liverpool, L24 9HJCriterion 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	24.4
Target CO ₂ emission rate (TER), kgCO ₂ /m ² .annum	24.4
Building CO ₂ emission rate (BER), kgCO ₂ /m ² .annum	22.7
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	0.26	0.49	00000009:Surf[2]
Floor	0.25	0.22	0.22	00000003:Surf[2]
Roof	0.25	0.18	0.18	00000003:Surf[3]
Windows***, roof windows, and rooflights	2.2	1.6	1.6	00000005:Surf[0]
Personnel doors	2.2	1.6	1.6	00000005:Surf[4]
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	4.28

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	0.9 to 0.95

1- BOILER to Radiant Panels - MVHR

	Heating efficiency	Cooling efficiency	Radiant efficiency	SFP [W/(l/s)]	HR efficiency
This system	0.96	-	0.2	0	0.85
Standard value	0.91*	N/A	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 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- BOILER to Radiant Panels - Nat. Vent.

	Heating efficiency	Cooling efficiency	Radiant efficiency	SFP [W/(l/s)]	HR efficiency
This system	0.96	-	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.					

3- BOILER to RADS - EXTRACT ONLY

	Heating efficiency	Cooling efficiency	Radiant efficiency	SFP [W/(l/s)]	HR efficiency
This system	0.96	-	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- DX Cooling

	Heating efficiency	Cooling efficiency	Radiant efficiency	SFP [W/(l/s)]	HR efficiency
This system	4	6.5	0	0	-
Standard value	2.5*	2.6	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 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- BOILER to Radiant Panels - ENHANCED NAT VENT.

	Heating efficiency	Cooling efficiency	Radiant efficiency	SFP [W/(l/s)]	HR efficiency
This system	0.96	-	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.					

1- DHW [972ltr]

	Water heating efficiency	Storage loss factor [kWh/litre per day]
This building	0.98	0.005
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	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
013/321 HYDROTHERAPY POOL	-	-	-	0.9	-	-	-	-	-	-	-	N/A
107/608 HYGIENE ROOM	-	-	-	0.6	-	-	-	-	-	-	-	N/A
101/603 KITCHEN CHANGE	-	-	0.4	-	-	-	-	-	-	-	-	N/A
099/601 KITCHEN AND SERVERY	-	-	0.4	-	-	-	-	-	-	-	-	N/A
003/409 PARENTS ROOM	-	-	-	1.5	-	-	-	-	-	-	-	N/A
006/407 REPROGRAPHICS	-	-	-	1.5	-	-	-	-	-	-	-	N/A
111/612 ACCESS. STAFF WC	-	-	-	1.1	-	-	-	-	-	-	-	N/A
122/613 ACCESS. STAFF WC	-	-	-	1.1	-	-	-	-	-	-	-	N/A
108/609 HYGIENE	-	-	-	0.6	-	-	-	-	-	-	-	N/A
014/320 SENSORY ROOM	-	-	-	1.5	-	-	-	-	-	-	-	N/A
056/413 OFFICE (2P)	-	-	-	1.5	-	-	-	-	-	-	-	N/A
119/620 INDIVIDUAL TOILET (PUPIL)-	-	-	-	1.1	-	-	-	-	-	-	-	N/A
034/302 SOFT PLAY ROOM	-	-	-	1.5	-	-	-	-	-	-	-	N/A
015/319 PHYSIOTHERAPY	-	-	-	1.5	-	-	-	-	-	-	-	N/A
016/318 THERAPY ROOM	-	-	-	1.5	-	-	-	-	-	-	-	N/A
051/103 PRIMARY CLASSROOM (AMBULANT)	-	-	-	-	-	0.2	-	-	-	-	-	N/A
048/106 PRIMARY CLASSROOM (AMBULANT)	-	-	-	-	-	0.2	-	-	-	-	-	N/A
109/610 HYGIENE	-	-	-	0.6	-	-	-	-	-	-	-	N/A
059/416 ICT TECH	-	-	-	1.5	-	-	-	-	-	-	-	N/A
049/105 PRIARY CLASSROOM (AMBULANT)	-	-	-	-	-	0.2	-	-	-	-	-	N/A
116/617 INDIVIDUAL TOILET (PUPIL)-	-	-	-	0.7	-	-	-	-	-	-	-	N/A
112/624 INDIVIDUAL TOILET (STAFF)	-	-	-	1.1	-	-	-	-	-	-	-	N/A
039/115 PRIMARY CLASSROOM (NON-AMBULANT)	-	-	-	-	-	0.2	-	-	-	-	-	N/A
040/114 PRIMARY CLASSROOM (NON-AMBULANT)	-	-	-	-	-	0.2	-	-	-	-	-	N/A
044/110 PRIMARY CLASSROOM (SEVERE AUTISM)	-	-	-	-	-	0.2	-	-	-	-	-	N/A
043/111 PRIMARY CLASSROOM (SEVERE AUTISM)	-	-	-	-	-	0.2	-	-	-	-	-	N/A
020/314a SMALL GROUP ROOM	-	-	-	0.9	-	-	-	-	-	-	-	N/A
120/621 INDIVIDUAL TOILET	-	-	-	1.1	-	-	-	-	-	-	-	N/A
018/316 CALM ROOM	-	-	-	1.1	-	-	-	-	-	-	-	N/A
042/112 PRIMARY CLASSROOM (NON-AMBULANT)	-	-	-	-	-	0.2	-	-	-	-	-	N/A
041/113 PRIMARY CLASSROOM (NON-AMBULANT)	-	-	-	-	-	0.2	-	-	-	-	-	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
045/109 PRIMARY CLASSROOM (SEVERE AUTISM)		-	-	-	-	-	0.2	-	-	-	-	N/A
106/607 HYGIENE ROOM		-	-	-	1.1	-	-	-	-	-	-	N/A
017/317 CALM ROOM		-	-	-	1.5	-	-	-	-	-	-	N/A
034/303 SEN THERAPY/MI		-	-	-	1.5	-	-	-	-	-	-	N/A
047/107 PRIMARY CLASSROOM /SEVERE AUTISM)		-	-	-	-	-	0.2	-	-	-	-	N/A
046/108 PRIMARY CLASSROOM (SEVERE AUTISM)		-	-	-	-	-	0.2	-	-	-	-	N/A
115/616 INDIVIDUAL TOILET (PUPIL)-		-	-	-	0.7	-	-	-	-	-	-	N/A
117/618 INDIVIDUAL TOILET (PUPIL)-		-	-	-	0.7	-	-	-	-	-	-	N/A
114/615 INDIVIDUAL TOILET (PUPIL)-		-	-	-	0.7	-	-	-	-	-	-	N/A
019/315 CALM ROOM		-	-	-	0.6	-	-	-	-	-	-	N/A
038/116 PRIMARY FOOD ROOM		-	-	-	0.6	-	-	-	-	-	-	N/A
110/611 HYGIENE		-	-	-	0.6	-	-	-	-	-	-	N/A
052/102 PRIMARY CLASSROOM		-	-	-	-	-	0.2	-	-	-	-	N/A
050/104 PRIMARY CLASSROOM		-	-	-	-	-	0.2	-	-	-	-	N/A
053/101 NURSERY/RECEPTION CLASSROOM		-	-	-	-	-	0.2	-	-	-	-	N/A
118/619 INDIVIDUAL TOILET (PUPIL)-		-	-	-	0.6	-	-	-	-	-	-	N/A
121/623 INDIVIDUAL TOILET (STAFF)		-	-	-	1.5	-	-	-	-	-	-	N/A
035/301 PRIMARY LIBRARY		-	-	-	1.5	-	-	-	-	-	-	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	
013/321 HYDROTHERAPY POOL		-	111	-	366
113/630 CIRCULATION		-	100	-	43
103/605 PUPIL SHOWER/CHANGE		-	94	-	38
011/402 STAFF ROOM		123	-	-	295
084/525 EXTERNAL PE STORE		111	-	-	8
082/523 POOL CHEMICAL STORE		111	-	-	7
107/608 HYGIENE ROOM		123	-	-	132
105/606 ACC. STAFF CHANGE		-	94	-	28
102/604 PUPIL SHOWER/CHANGE		-	94	-	38
012/401 STAFF WORK ROOM		-	94	-	124
134/630 CIRCULATION		-	100	-	47
060/417 OFFICE/WORKROOM (PREMISES)		123	-	-	71
101/603 KITCHEN CHANGE		-	123	-	77
100/602 KITCHEN STORE		111	-	-	7
099/601 KITCHEN AND SERVERY		-	123	-	301
085/526 CHAIR/TABLE STORE		111	-	-	10
098/533 MAINTENANCE STORE		111	-	-	10
140/631 STORE		111	-	-	13
077/518 MUSIC STORE		111	-	-	7
003/409 PARENTS ROOM		123	-	-	94
006/407 REPROGRAPHICS		123	-	-	86

General lighting and display lighting		Luminous efficacy [lm/W]			General lighting [W]
Zone name		Luminaire	Lamp	Display lamp	
	Standard value	60	60	22	
128/629 SERVER		123	-	-	99
086/527 CENTRAL STOCK		111	-	-	9
087/528 EXAM STORE		111	-	-	8
009/404 CONFERENCE/MEETING		123	-	-	105
007/406 HEAD'S PA OFFICE		123	-	-	65
008/405 HEAD'S OFFICE		123	-	-	111
010/403 STAFF ROOM		123	-	-	88
057/414 OFFICE/MEETING (2P)		123	-	-	98
136/630 CIRCULATION		-	100	-	45
004/408 RECEPTION OFFICE		123	-	-	140
111/612 ACCESS. STAFF WC		-	94	-	35
122/613 ACCESS. STAFF WC		-	94	-	35
075/515 IT STORE		111	-	-	7
096/531 CLNRS STORE		111	-	-	7
058/415 SENCo LEARNING SUPPORT		123	-	-	66
108/609 HYGIENE		111	-	-	101
014/320 SENSORY ROOM		123	-	-	127
056/413 OFFICE (2P)		123	-	-	84
119/620 INDIVIDUAL TOILET (PUPIL)		-	94	-	34
034/302 SOFT PLAY ROOM		123	-	-	152
015/319 PHYSIOTHERAPY		123	-	-	132
016/318 THERAPY ROOM		123	-	-	117
051/103 PRIMARY CLASSROOM (AMBULANT)		123	-	-	232
048/106 PRIMARY CLASSROOM (AMBULANT)		123	-	-	234
022/313 SMALL GROUP ROOM		123	-	-	81
109/610 HYGIENE		111	-	-	105
059/416 ICT TECH		123	-	-	75
023/312 SMALL GROUP ROOM		123	-	-	83
062/505 IT STORE		111	-	-	7
074/514 IT STORE		111	-	-	7
049/105 PRIARY CLASSROOM (AMBULANT)		123	-	-	229
093/529 WHEELCHAIR/APP. STORE		111	-	-	12
116/617 INDIVIDUAL TOILET (PUPIL)		-	94	-	35
112/624 INDIVIDUAL TOILET (STAFF)		-	94	-	34
039/115 PRIMARY CLASSROOM (NON-AMBULANT)		123	-	-	183
040/114 PRIMARY CLASSROOM (NON-AMBULANT)		123	-	-	233
024/311 SMALL GROUP ROOM		123	-	-	82
089/529 WHEELCHAIR/APP. STORE		111	-	-	12
072/512 IT STORE		111	-	-	7
073/513 IT STORE		111	-	-	7
044/110 PRIMARY CLASSROOM (SEVERE AUTISM)		123	-	-	233
043/111 PRIMARY CLASSROOM (SEVERE AUTISM)		123	-	-	234
021/314b SMALL GROUP ROOM		123	-	-	72

General lighting and display lighting		Luminous efficacy [lm/W]			General lighting [W]
Zone name		Luminaire	Lamp	Display lamp	
	Standard value	60	60	22	
020/314a SMALL GROUP ROOM		123	-	-	75
120/621 INDIVIDUAL TOILET		-	94	-	44
028/308 SMALL GROUP ROOM		123	-	-	83
018/316 CALM ROOM		123	-	-	71
069/509 IT STORE		111	-	-	7
068/508 IT STORE		111	-	-	7
042/112 PRIMARY CLASSROOM (NON-AMBULANT)		123	-	-	183
041/113 PRIMARY CLASSROOM (NON-AMBULANT)		123	-	-	234
045/109 PRIMARY CLASSROOM (SEVERE AUTISM)		123	-	-	184
106/607 HYGIENE ROOM		123	-	-	132
026/309a SMALL GROUP ROOM		123	-	-	57
027/309b SMALL GROUP ROOM		123	-	-	57
025/310 SMALL GROUP ROOM		123	-	-	83
094/529 WHEELCHAIR/APP. STORE		111	-	-	12
071/511 IT STORE		111	-	-	7
070/510 IT STORE		111	-	-	7
135/630 CIRCULATION		-	100	-	119
138/630 CIRCULATION		-	100	-	95
137/630 CIRCULATION		-	100	-	45
017/317 CALM ROOM		123	-	-	96
034/303 SEN THERAPY/MI		123	-	-	108
079/520 MEDICAL STORE		111	-	-	8
097/418 LAUNDRY		111	-	-	7
132/630 CIRCULATION		-	100	-	81
131/630 CIRCULATION		-	100	-	291
047/107 PRIMARY CLASSROOM /SEVERE AUTISM)		123	-	-	231
090/529 WHEELCHAIR/APP. STORE		111	-	-	12
091/529 WHEELCHAIR/APP. STORE		111	-	-	12
046/108 PRIMARY CLASSROOM (SEVERE AUTISM)		123	-	-	185
063/503 IT STORE		111	-	-	7
064/504 IT STORE		111	-	-	7
115/616 INDIVIDUAL TOILET (PUPIL)		-	94	-	36
033/304b SMALL GROUP ROOM		123	-	-	66
117/618 INDIVIDUAL TOILET (PUPIL)		-	94	-	37
114/615 INDIVIDUAL TOILET (PUPIL)		-	94	-	38
032/304a SMALL GROUP ROOM		123	-	-	67
031/305 SMALL GROUP ROOM		123	-	-	83
019/315 CALM ROOM		123	-	-	67
038/116 PRIMARY FOOD ROOM		-	123	-	215
110/611 HYGIENE		111	-	-	104
080/521 LIBRARY STORE		111	-	-	7
076/517 FOOD ROOM STORE		111	-	-	8
139/630 CIRCULATION		-	100	-	111

General lighting and display lighting		Luminous efficacy [lm/W]			General lighting [W]
Zone name		Luminaire	Lamp	Display lamp	
	Standard value	60	60	22	
052/102 PRIMARY CLASSROOM		123	-	-	232
050/104 PRIMARY CLASSROOM		123	-	-	230
029/307 SMALL GROUP ROOM		123	-	-	84
066/506 IT STORE		111	-	-	7
067/507 IT STORE		111	-	-	7
092/529 WHEELCHAIR/APP. STORE		111	-	-	8
095/529 WHEELCHAIR/APP. STORE		111	-	-	8
053/101 NURSERY/RECEPTION CLASSROOM		123	-	-	343
030/306 SMALL GROUP ROOM		123	-	-	84
065/505 IT STORE		111	-	-	9
118/619 INDIVIDUAL TOILET (PUPIL)		-	94	-	44
129/630 CIRCULATION		-	100	-	104
083/526 PE STORE		111	-	-	10
078/519 DRAMA STORE		111	-	-	7
002/411 INTERVIEW		-	100	-	16
130/630 CIRCULATION		-	100	-	39
001/410 ENTRANCE/RECEPTION		-	100	-	13
088/529 WHEELCHAIR/APP. STORE		111	-	-	33
081/522 SEN STORE		111	-	-	8
121/623 INDIVIDUAL TOILET (STAFF)		-	94	-	35
061/501 IT STORE		111	-	-	9
035/301 PRIMARY LIBRARY		123	-	-	91
036/202 DINING HALL		-	123	-	557
037/201 HALL (PE/ASSEMBLY)		-	123	-	354

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?
013/321 HYDROTHERAPY POOL	N/A	N/A
011/402 STAFF ROOM	NO (-49.3%)	NO
107/608 HYGIENE ROOM	N/A	N/A
060/417 OFFICE/WORKROOM (PREMISES)	NO (-69.4%)	NO
003/409 PARENTS ROOM	N/A	N/A
006/407 REPROGRAPHICS	N/A	N/A
128/629 SERVER	N/A	N/A
009/404 CONFERENCE/MEETING	NO (-66.7%)	NO
007/406 HEAD'S PA OFFICE	NO (-64.3%)	NO
008/405 HEAD'S OFFICE	NO (-56.8%)	NO
010/403 STAFF ROOM	NO (-46.3%)	NO
057/414 OFFICE/MEETING (2P)	NO (-56.7%)	NO
004/408 RECEPTION OFFICE	NO (-59.4%)	NO
058/415 SENco LEARNING SUPPORT	NO (-60.3%)	NO
108/609 HYGIENE	N/A	N/A
014/320 SENSORY ROOM	N/A	N/A

Zone	Solar gain limit exceeded? (%)	Internal blinds used?
056/413 OFFICE (2P)	N/A	N/A
034/302 SOFT PLAY ROOM	N/A	N/A
015/319 PHYSIOTHERAPY	N/A	N/A
016/318 THERAPY ROOM	NO (-72.9%)	NO
051/103 PRIMARY CLASSROOM (AMBULANT)	NO (-32.3%)	NO
048/106 PRIMARY CLASSROOM (AMBULANT)	NO (-51.3%)	NO
022/313 SMALL GROUP ROOM	NO (-41.3%)	NO
109/610 HYGIENE	N/A	N/A
059/416 ICT TECH	N/A	N/A
023/312 SMALL GROUP ROOM	NO (-46.4%)	NO
049/105 PRIARY CLASSROOM (AMBULANT)	NO (-30.9%)	NO
039/115 PRIMARY CLASSROOM (NON-AMBULANT)	NO (-64.6%)	NO
040/114 PRIMARY CLASSROOM (NON-AMBULANT)	NO (-31.8%)	NO
024/311 SMALL GROUP ROOM	NO (-51.2%)	NO
044/110 PRIMARY CLASSROOM (SEVERE AUTISM)	NO (-43.1%)	NO
043/111 PRIMARY CLASSROOM (SEVERE AUTISM)	NO (-63.1%)	NO
021/314b SMALL GROUP ROOM	NO (-61.5%)	NO
020/314a SMALL GROUP ROOM	N/A	N/A
028/308 SMALL GROUP ROOM	NO (-59.3%)	NO
018/316 CALM ROOM	N/A	N/A
042/112 PRIMARY CLASSROOM (NON-AMBULANT)	NO (-74.3%)	NO
041/113 PRIMARY CLASSROOM (NON-AMBULANT)	NO (-50.7%)	NO
045/109 PRIMARY CLASSROOM (SEVERE AUTISM)	NO (-46.7%)	NO
106/607 HYGIENE ROOM	N/A	N/A
026/309a SMALL GROUP ROOM	NO (-58.3%)	NO
027/309b SAMLG GROUP ROOM	NO (-58.3%)	NO
025/310 SMALL GROUP ROOM	NO (-63.8%)	NO
017/317 CALM ROOM	N/A	N/A
034/303 SEN THERAPY/MI	N/A	N/A
047/107 PRIMARY CLASSROOM /SEVERE AUTISM	NO (-26.6%)	NO
046/108 PRIMARY CLASSROOM (SEVERE AUTISM)	NO (-26.7%)	NO
033/304b SMALL GROUP ROOM	NO (-52.5%)	NO
032/304a SMALL GROUP ROOM	NO (-27.5%)	NO
031/305 SMALL GROUP ROOM	NO (-48.4%)	NO
019/315 CALM ROOM	N/A	N/A
110/611 HYGIENE	N/A	N/A
052/102 PRIMARY CLASSROOM	NO (-69.5%)	NO
050/104 PRIMARY CLASSROOM	NO (-44.7%)	NO
029/307 SMALL GROUP ROOM	NO (-60.1%)	NO
053/101 NURSERY/RECEPTION CLASSROOM	NO (-56.2%)	NO
030/306 SMALL GROUP ROOM	NO (-57.2%)	NO
035/301 PRIMARY LIBRARY	NO (-58.4%)	NO
036/202 DINING HALL	NO (-36.8%)	NO
037/201 HALL (PE/ASSEMBLY)	NO (-44.4%)	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?	YES
Is evidence of such assessment available as a separate submission?	YES
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]	2844.4	2844.4
External area [m ²]	7167.8	7170.7
Weather	MAN	MAN
Infiltration [m ³ /hm ² @ 50Pa]	4	3
Average conductance [W/K]	2168.17	2160.86
Average U-value [W/m ² K]	0.3	0.3
Alpha value* [%]	9.37	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
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
100 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	41.38	42.92
Cooling	0	0
Auxiliary	2.37	1.59
Lighting	5.83	13.09
Hot water	28.67	30.07
Equipment*	15.84	15.84
TOTAL **	78.26	87.68

* 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]	134.9	133.85
Primary energy* [kWh/m ²]	130.87	154.54
Total emissions [kg/m ²]	22.7	24.4

* 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	210	0	64.7	0	6.2	0.9	0	0.96	0	
Notional	181.4	0	58.5	0	3.3	0.86	0	----	----	
[ST] Central heating using water: convectors, [HS] LTHW boiler, [HFT] Natural Gas, [CFT] Electricity										
Actual	120.4	0	37.2	0	1.1	0.9	0	0.96	0	
Notional	134.4	0	43.3	0	1.4	0.86	0	----	----	
[ST] Central heating using water: radiators, [HS] LTHW boiler, [HFT] Natural Gas, [CFT] Electricity										
Actual	216	0	66.5	0	2	0.9	0	0.96	0	
Notional	193.6	0	62.4	0	1.9	0.86	0	----	----	
[ST] Split or multi-split system, [HS] Heat pump (electric): air source, [HFT] Electricity, [CFT] Electricity										
Actual	166.6	9.6	11.8	0.5	0	3.92	4.86	4	6.5	
Notional	186.9	4.1	20.3	0.3	0	2.56	3.79	----	----	
[ST] Central heating using water: radiators, [HS] LTHW boiler, [HFT] Natural Gas, [CFT] Electricity										
Actual	103.4	0	31.9	0	2.1	0.9	0	0.96	0	
Notional	104.7	0	33.7	0	1	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	0.04	00000031:Surf[32]
Floor	0.2	0.22	00000003:Surf[2]
Roof	0.15	0.18	00000003:Surf[3]
Windows, roof windows, and rooflights	1.5	1.6	00000005:Surf[0]
Personnel doors	1.5	1.6	00000005:Surf[4]
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	4.28