

Date: 17th July 2024
Project: Unite Kincardine Court
F.A.O: Malcolm Robertson

Malcolm,

In relation to the Unite Kincardine Court; Ameon Ltd can confirm that the building has been assessed under Building Regulations Part L 2013 and has demonstrated a carbon reduction of 18.8% when comparing the Building Emission Rate (BER) against the Target Emission Rate (TER) of the notional building model.

The attached BRUKL report demonstrates that the carbon reduction achieved, exceeds the 15.3% target set out in the Environmental Standards Statement, issued to the City Council, as Local Planning Authority, on 7th August 2019.

We assume this closes out any queries in relation to this topic, however if you need any further information please do not hesitate to contact me.

Yours faithfully



David Connor BEng (Hons.) IEng MCIBSE MSoPHE
Design Director

Ameon Limited



CARBONCONSULTANTS



Project name

Unite Kincardine Court

As built

Date: Wed Mar 22 13:19:53 2023

Administrative information

Building Details

Address: Kincardine Road, Manchester, M13 9JA

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: Julian Maybury

Telephone number: 07747 690076

Address: JJMTEC Ltd., 6 Northop Road, Wirral, CH45 4QD

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	34.5
Target CO ₂ emission rate (TER), kgCO ₂ /m ² .annum	34.5
Building CO ₂ emission rate (BER), kgCO ₂ /m ² .annum	28
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	0.18	0.36	L0000002:Surf[5]
Floor	0.25	0.2	0.2	L0000001:Surf[0]
Roof	0.25	0.15	0.15	L1000007:Surf[2]
Windows***, roof windows, and rooflights	2.2	1.38	1.54	L0000048:Surf[1]
Personnel doors	2.2	1.79	1.8	L0000046:Surf[1]
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	4.96

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- Panel heaters + Nat.Vent.

	Heating efficiency	Cooling efficiency	Radiant efficiency	SFP [W/(l/s)]	HR efficiency
This system	1	-	0.5	0	-
Standard value	N/A	N/A	N/A	N/A	N/A
Automatic monitoring & targeting with alarms for out-of-range values for this HVAC system					NO

2- Panel heaters + MVHR (5 bed)

	Heating efficiency	Cooling efficiency	Radiant efficiency	SFP [W/(l/s)]	HR efficiency
This system	1	-	0.5	0	0.9
Standard value	N/A	N/A	N/A	N/A	0.5
Automatic monitoring & targeting with alarms for out-of-range values for this HVAC system					NO

3- Panel heaters + Local Extract

	Heating efficiency	Cooling efficiency	Radiant efficiency	SFP [W/(l/s)]	HR efficiency
This system	1	-	0.5	0	-
Standard value	N/A	N/A	N/A	N/A	N/A
Automatic monitoring & targeting with alarms for out-of-range values for this HVAC system					NO

4- AC + Mech.Vent (RAV-GP1101AT)

	Heating efficiency	Cooling efficiency	Radiant efficiency	SFP [W/(l/s)]	HR efficiency
This system	5	4.69	0	0	0.9
Standard value	2.5*	2.6	N/A	N/A	0.5
Automatic monitoring & targeting with alarms for out-of-range values for this HVAC system					NO
* Standard shown is for 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- AC + Mech.Vent (RAV-GP561AT)

	Heating efficiency	Cooling efficiency	Radiant efficiency	SFP [W/(l/s)]	HR efficiency
This system	4.96	3.29	0	0	0.8
Standard value	2.5*	2.6	N/A	N/A	0.5
Automatic monitoring & targeting with alarms for out-of-range values for this HVAC system					NO
* Standard shown is for 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- Panel heaters + MVHR (4 bed)

	Heating efficiency	Cooling efficiency	Radiant efficiency	SFP [W/(l/s)]	HR efficiency
This system	1	-	0.5	0	0.9
Standard value	N/A	N/A	N/A	N/A	0.5
Automatic monitoring & targeting with alarms for out-of-range values for this HVAC system					NO

7- Panel heaters + MVHR (6 bed)

	Heating efficiency	Cooling efficiency	Radiant efficiency	SFP [W/(l/s)]	HR efficiency
This system	1	-	0.5	0	0.91
Standard value	N/A	N/A	N/A	N/A	0.5
Automatic monitoring & targeting with alarms for out-of-range values for this HVAC system					NO

8- Panel heaters + MVHR (studio)

	Heating efficiency	Cooling efficiency	Radiant efficiency	SFP [W/(l/s)]	HR efficiency
This system	1	-	0.5	0	0.85
Standard value	N/A	N/A	N/A	N/A	0.5
Automatic monitoring & targeting with alarms for out-of-range values for this HVAC system					NO

1- DHW system

	Water heating efficiency	Storage loss factor [kWh/litre per day]
This building	4.3	-
Standard value	2*	N/A

* Standard shown is for all types except absorption and gas engine heat pumps.

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	
L0 001A Bathroom	-	-	-	0.8	-	-	-	-	-	-	N/A	
L0 001A Bedroom	-	-	-	0.8	-	-	-	-	-	-	N/A	
L0 001B Bathroom	-	-	-	0.8	-	-	-	-	-	-	N/A	
L0 001B Bedroom	-	-	-	0.8	-	-	-	-	-	-	N/A	
L0 001C Bathroom	-	-	-	0.8	-	-	-	-	-	-	N/A	
L0 001C Bedroom	-	-	-	0.8	-	-	-	-	-	-	N/A	
L0 001D Bathroom	-	-	-	0.8	-	-	-	-	-	-	N/A	
L0 001D Bedroom	-	-	-	0.8	-	-	-	-	-	-	N/A	
L0 001E Bedroom	-	-	-	0.8	-	-	-	-	-	-	N/A	
L0 001E Bedroom	-	-	-	0.8	-	-	-	-	-	-	N/A	
L0 001K Kitchen	-	-	-	0.8	-	-	-	-	-	-	N/A	
L0 002A Bathroom	-	-	-	0.8	-	-	-	-	-	-	N/A	
L0 002A Bedroom	-	-	-	0.8	-	-	-	-	-	-	N/A	
L0 002B Bathroom	-	-	-	0.8	-	-	-	-	-	-	N/A	
L0 002B Bedroom	-	-	-	0.8	-	-	-	-	-	-	N/A	
L0 002C Bathroom	-	-	-	0.8	-	-	-	-	-	-	N/A	
L0 002C Bedroom	-	-	-	0.8	-	-	-	-	-	-	N/A	
L0 002D Bathroom	-	-	-	0.8	-	-	-	-	-	-	N/A	
L0 002D Bedroom	-	-	-	0.8	-	-	-	-	-	-	N/A	
L0 002E Bathroom	-	-	-	0.8	-	-	-	-	-	-	N/A	
L0 002E Bedroom	-	-	-	0.8	-	-	-	-	-	-	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	
L0 002F Bathroom	-	-	-	0.8	-	-	-	-	-	-	N/A	
L0 002F Bedroom	-	-	-	0.8	-	-	-	-	-	-	N/A	
L0 002K Kitchen	-	-	-	0.8	-	-	-	-	-	-	N/A	
L0 003 Accessible Studio	-	-	-	0.8	-	-	-	-	-	-	N/A	
L0 003 Bathroom	-	-	-	0.8	-	-	-	-	-	-	N/A	
L0 Accessible WC	0.5	-	-	-	-	-	-	-	-	-	N/A	
L0 Common Room	-	-	-	1.8	-	-	-	-	-	-	N/A	
L1 101A Bathroom	-	-	-	0.6	-	-	-	-	-	-	N/A	
L1 101A Bedroom	-	-	-	0.6	-	-	-	-	-	-	N/A	
L1 101B Bathroom	-	-	-	0.6	-	-	-	-	-	-	N/A	
L1 101B Bedroom	-	-	-	0.6	-	-	-	-	-	-	N/A	
L1 101C Bathroom	-	-	-	0.6	-	-	-	-	-	-	N/A	
L1 101C Bedroom	-	-	-	0.6	-	-	-	-	-	-	N/A	
L1 101D Bathroom	-	-	-	0.6	-	-	-	-	-	-	N/A	
L1 101D Bedroom	-	-	-	0.6	-	-	-	-	-	-	N/A	
L1 101K Kitchen	-	-	-	0.6	-	-	-	-	-	-	N/A	
L1 102A Bathroom	-	-	-	0.9	-	-	-	-	-	-	N/A	
L1 102A Bedroom	-	-	-	0.9	-	-	-	-	-	-	N/A	
L1 102B Bathroom	-	-	-	0.9	-	-	-	-	-	-	N/A	
L1 102B Bedroom	-	-	-	0.9	-	-	-	-	-	-	N/A	
L1 102C Bathroom	-	-	-	0.9	-	-	-	-	-	-	N/A	
L1 102C Bedroom	-	-	-	0.9	-	-	-	-	-	-	N/A	
L1 102D Bathroom	-	-	-	0.9	-	-	-	-	-	-	N/A	
L1 102D Bedroom	-	-	-	0.9	-	-	-	-	-	-	N/A	
L1 102E Bathroom	-	-	-	0.9	-	-	-	-	-	-	N/A	
L1 102E Bedroom	-	-	-	0.9	-	-	-	-	-	-	N/A	
L1 102F Bathroom	-	-	-	0.9	-	-	-	-	-	-	N/A	
L1 102F Bedroom	-	-	-	0.9	-	-	-	-	-	-	N/A	
L1 102K Kitchen	-	-	-	0.9	-	-	-	-	-	-	N/A	
L1 103 Adaptable Studio	-	-	-	0.7	-	-	-	-	-	-	N/A	
L1 103 Bathroom	-	-	-	0.7	-	-	-	-	-	-	N/A	
L1 104 Adaptable Studio	-	-	-	0.7	-	-	-	-	-	-	N/A	
L1 104 Bathroom	-	-	-	0.7	-	-	-	-	-	-	N/A	
L1 105 Bathroom	-	-	-	0.7	-	-	-	-	-	-	N/A	
L1 105 Studio	-	-	-	0.7	-	-	-	-	-	-	N/A	
L1 106 Bathroom	-	-	-	0.7	-	-	-	-	-	-	N/A	
L1 106 Studio	-	-	-	0.7	-	-	-	-	-	-	N/A	
L1 107A Bathroom	-	-	-	0.9	-	-	-	-	-	-	N/A	
L1 107A Bedroom	-	-	-	0.9	-	-	-	-	-	-	N/A	
L1 107B Bathroom	-	-	-	0.9	-	-	-	-	-	-	N/A	
L1 107B Bedroom	-	-	-	0.9	-	-	-	-	-	-	N/A	
L1 107C Bathroom	-	-	-	0.9	-	-	-	-	-	-	N/A	
L1 107C Bedroom	-	-	-	0.9	-	-	-	-	-	-	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	
L1 107D Bathroom	-	-	-	0.9	-	-	-	-	-	-	N/A	
L1 107D Bedroom	-	-	-	0.9	-	-	-	-	-	-	N/A	
L1 107E Bathroom	-	-	-	0.9	-	-	-	-	-	-	N/A	
L1 107E Bedroom	-	-	-	0.9	-	-	-	-	-	-	N/A	
L1 107F Bathroom	-	-	-	0.9	-	-	-	-	-	-	N/A	
L1 107F Bedroom	-	-	-	0.9	-	-	-	-	-	-	N/A	
L1 107K Kitchen	-	-	-	0.9	-	-	-	-	-	-	N/A	
L2 201A Bathroom	-	-	-	0.6	-	-	-	-	-	-	N/A	
L2 201A Bedroom	-	-	-	0.6	-	-	-	-	-	-	N/A	
L2 201B Bathroom	-	-	-	0.6	-	-	-	-	-	-	N/A	
L2 201B Bedroom	-	-	-	0.6	-	-	-	-	-	-	N/A	
L2 201C Bathroom	-	-	-	0.6	-	-	-	-	-	-	N/A	
L2 201C Bedroom	-	-	-	0.6	-	-	-	-	-	-	N/A	
L2 201D Bathroom	-	-	-	0.6	-	-	-	-	-	-	N/A	
L2 201D Bedroom	-	-	-	0.6	-	-	-	-	-	-	N/A	
L2 201K Kitchen	-	-	-	0.6	-	-	-	-	-	-	N/A	
L2 202A Bathroom	-	-	-	0.9	-	-	-	-	-	-	N/A	
L2 202A Bedroom	-	-	-	0.9	-	-	-	-	-	-	N/A	
L2 202B Bathroom	-	-	-	0.9	-	-	-	-	-	-	N/A	
L2 202B Bedroom	-	-	-	0.9	-	-	-	-	-	-	N/A	
L2 202C Bathroom	-	-	-	0.9	-	-	-	-	-	-	N/A	
L2 202C Bedroom	-	-	-	0.9	-	-	-	-	-	-	N/A	
L2 202D Bathroom	-	-	-	0.9	-	-	-	-	-	-	N/A	
L2 202D Bedroom	-	-	-	0.9	-	-	-	-	-	-	N/A	
L2 202E Bathroom	-	-	-	0.9	-	-	-	-	-	-	N/A	
L2 202E Bedroom	-	-	-	0.9	-	-	-	-	-	-	N/A	
L2 202F Bathroom	-	-	-	0.9	-	-	-	-	-	-	N/A	
L2 202F Bedroom	-	-	-	0.9	-	-	-	-	-	-	N/A	
L2 202K Kitchen	-	-	-	0.9	-	-	-	-	-	-	N/A	
L2 203 Adaptable Studio	-	-	-	0.7	-	-	-	-	-	-	N/A	
L2 203 Bathroom	-	-	-	0.7	-	-	-	-	-	-	N/A	
L2 204 Adaptable Studio	-	-	-	0.7	-	-	-	-	-	-	N/A	
L2 204 Bathroom	-	-	-	0.7	-	-	-	-	-	-	N/A	
L2 205 Bathroom	-	-	-	0.7	-	-	-	-	-	-	N/A	
L2 205 Studio	-	-	-	0.7	-	-	-	-	-	-	N/A	
L2 206 Bathroom	-	-	-	0.7	-	-	-	-	-	-	N/A	
L2 206 Studio	-	-	-	0.7	-	-	-	-	-	-	N/A	
L2 207A Bathroom	-	-	-	0.9	-	-	-	-	-	-	N/A	
L2 207A Bedroom	-	-	-	0.9	-	-	-	-	-	-	N/A	
L2 207B Bathroom	-	-	-	0.9	-	-	-	-	-	-	N/A	
L2 207B Bedroom	-	-	-	0.9	-	-	-	-	-	-	N/A	
L2 207C Bathroom	-	-	-	0.9	-	-	-	-	-	-	N/A	
L2 207C Bedroom	-	-	-	0.9	-	-	-	-	-	-	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	
L2 207D Bathroom	-	-	-	0.9	-	-	-	-	-	-	N/A	
L2 207D Bedroom	-	-	-	0.9	-	-	-	-	-	-	N/A	
L2 207E Bathroom	-	-	-	0.9	-	-	-	-	-	-	N/A	
L2 207E Bedroom	-	-	-	0.9	-	-	-	-	-	-	N/A	
L2 207F Bathroom	-	-	-	0.9	-	-	-	-	-	-	N/A	
L2 207F Bedroom	-	-	-	0.9	-	-	-	-	-	-	N/A	
L2 207K Kitchen	-	-	-	0.9	-	-	-	-	-	-	N/A	
L3 301A Bathroom	-	-	-	0.6	-	-	-	-	-	-	N/A	
L3 301A Bedroom	-	-	-	0.6	-	-	-	-	-	-	N/A	
L3 301B Bathroom	-	-	-	0.6	-	-	-	-	-	-	N/A	
L3 301B Bedroom	-	-	-	0.6	-	-	-	-	-	-	N/A	
L3 301C Bathroom	-	-	-	0.6	-	-	-	-	-	-	N/A	
L3 301C Bedroom	-	-	-	0.6	-	-	-	-	-	-	N/A	
L3 301D Bathroom	-	-	-	0.6	-	-	-	-	-	-	N/A	
L3 301D Bedroom	-	-	-	0.6	-	-	-	-	-	-	N/A	
L3 301K Kitchen	-	-	-	0.6	-	-	-	-	-	-	N/A	
L3 302A Bathroom	-	-	-	0.9	-	-	-	-	-	-	N/A	
L3 302A Bedroom	-	-	-	0.9	-	-	-	-	-	-	N/A	
L3 302B Bathroom	-	-	-	0.9	-	-	-	-	-	-	N/A	
L3 302B Bedroom	-	-	-	0.9	-	-	-	-	-	-	N/A	
L3 302C Bathroom	-	-	-	0.9	-	-	-	-	-	-	N/A	
L3 302C Bedroom	-	-	-	0.9	-	-	-	-	-	-	N/A	
L3 302D Bathroom	-	-	-	0.9	-	-	-	-	-	-	N/A	
L3 302D Bedroom	-	-	-	0.9	-	-	-	-	-	-	N/A	
L3 302E Bathroom	-	-	-	0.9	-	-	-	-	-	-	N/A	
L3 302E Bedroom	-	-	-	0.9	-	-	-	-	-	-	N/A	
L3 302F Bathroom	-	-	-	0.9	-	-	-	-	-	-	N/A	
L3 302F Bedroom	-	-	-	0.9	-	-	-	-	-	-	N/A	
L3 302K Kitchen	-	-	-	0.9	-	-	-	-	-	-	N/A	
L3 303 Adaptable Studio	-	-	-	0.7	-	-	-	-	-	-	N/A	
L3 303 Bathroom	-	-	-	0.7	-	-	-	-	-	-	N/A	
L3 304 Adaptable Studio	-	-	-	0.7	-	-	-	-	-	-	N/A	
L3 304 Bathroom	-	-	-	0.7	-	-	-	-	-	-	N/A	
L3 305 Bathroom	-	-	-	0.7	-	-	-	-	-	-	N/A	
L3 305 Studio	-	-	-	0.7	-	-	-	-	-	-	N/A	
L3 306 Bathroom	-	-	-	0.7	-	-	-	-	-	-	N/A	
L3 306 Studio	-	-	-	0.7	-	-	-	-	-	-	N/A	
L3 307A Bathroom	-	-	-	0.9	-	-	-	-	-	-	N/A	
L3 307A Bedroom	-	-	-	0.9	-	-	-	-	-	-	N/A	
L3 307B Bathroom	-	-	-	0.9	-	-	-	-	-	-	N/A	
L3 307B Bedroom	-	-	-	0.9	-	-	-	-	-	-	N/A	
L3 307C Bathroom	-	-	-	0.9	-	-	-	-	-	-	N/A	
L3 307C Bedroom	-	-	-	0.9	-	-	-	-	-	-	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	
L3 307D Bathroom	-	-	-	0.9	-	-	-	-	-	-	N/A	
L3 307D Bedroom	-	-	-	0.9	-	-	-	-	-	-	N/A	
L3 307E Bathroom	-	-	-	0.9	-	-	-	-	-	-	N/A	
L3 307E Bedroom	-	-	-	0.9	-	-	-	-	-	-	N/A	
L3 307F Bathroom	-	-	-	0.9	-	-	-	-	-	-	N/A	
L3 307F Bedroom	-	-	-	0.9	-	-	-	-	-	-	N/A	
L3 307K Kitchen	-	-	-	0.9	-	-	-	-	-	-	N/A	
L4 401A Bathroom	-	-	-	0.8	-	-	-	-	-	-	N/A	
L4 401A Bedroom	-	-	-	0.8	-	-	-	-	-	-	N/A	
L4 401B Bathroom	-	-	-	0.8	-	-	-	-	-	-	N/A	
L4 401B Bedroom	-	-	-	0.8	-	-	-	-	-	-	N/A	
L4 401C Bathroom	-	-	-	0.8	-	-	-	-	-	-	N/A	
L4 401C Bedroom	-	-	-	0.8	-	-	-	-	-	-	N/A	
L4 401D Bathroom	-	-	-	0.8	-	-	-	-	-	-	N/A	
L4 401D Bedroom	-	-	-	0.8	-	-	-	-	-	-	N/A	
L4 401E Bathroom	-	-	-	0.8	-	-	-	-	-	-	N/A	
L4 401E Bedroom	-	-	-	0.8	-	-	-	-	-	-	N/A	
L4 401K Kitchen	-	-	-	0.8	-	-	-	-	-	-	N/A	
L4 402 Bathroom	-	-	-	0.7	-	-	-	-	-	-	N/A	
L4 402 Studio	-	-	-	0.7	-	-	-	-	-	-	N/A	
L4 403 Bathroom	-	-	-	0.7	-	-	-	-	-	-	N/A	
L4 403 Studio	-	-	-	0.7	-	-	-	-	-	-	N/A	
L4 404 Bathroom	-	-	-	0.7	-	-	-	-	-	-	N/A	
L4 404 Studio	-	-	-	0.7	-	-	-	-	-	-	N/A	
L4 405A Bathroom	-	-	-	0.6	-	-	-	-	-	-	N/A	
L4 405A Bedroom	-	-	-	0.6	-	-	-	-	-	-	N/A	
L4 405B Bathroom	-	-	-	0.6	-	-	-	-	-	-	N/A	
L4 405B Bedroom	-	-	-	0.6	-	-	-	-	-	-	N/A	
L4 405C Bathroom	-	-	-	0.6	-	-	-	-	-	-	N/A	
L4 405C Bedroom	-	-	-	0.6	-	-	-	-	-	-	N/A	
L4 405D Bathroom	-	-	-	0.6	-	-	-	-	-	-	N/A	
L4 405D Bedroom	-	-	-	0.6	-	-	-	-	-	-	N/A	
L4 405K Kitchen	-	-	-	0.6	-	-	-	-	-	-	N/A	
L5 501A Bathroom	-	-	-	0.8	-	-	-	-	-	-	N/A	
L5 501A Bedroom	-	-	-	0.8	-	-	-	-	-	-	N/A	
L5 501B Bathroom	-	-	-	0.8	-	-	-	-	-	-	N/A	
L5 501B Bedroom	-	-	-	0.8	-	-	-	-	-	-	N/A	
L5 501C Bathroom	-	-	-	0.8	-	-	-	-	-	-	N/A	
L5 501C Bedroom	-	-	-	0.8	-	-	-	-	-	-	N/A	
L5 501D Bathroom	-	-	-	0.8	-	-	-	-	-	-	N/A	
L5 501D Bedroom	-	-	-	0.8	-	-	-	-	-	-	N/A	
L5 501E Bathroom	-	-	-	0.8	-	-	-	-	-	-	N/A	
L5 501E Bedroom	-	-	-	0.8	-	-	-	-	-	-	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
L5 501K Kitchen	-	-	-	0.8	-	-	-	-	-	-	N/A
L5 502 Bathroom	-	-	-	0.7	-	-	-	-	-	-	N/A
L5 502 Studio	-	-	-	0.7	-	-	-	-	-	-	N/A
L5 503 Bathroom	-	-	-	0.7	-	-	-	-	-	-	N/A
L5 503 Studio	-	-	-	0.7	-	-	-	-	-	-	N/A
L5 504 Bathroom	-	-	-	0.7	-	-	-	-	-	-	N/A
L5 504 Studio	-	-	-	0.7	-	-	-	-	-	-	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	
L0 001 Cluster Corridor		-	50	-	55
L0 001A Bathroom		-	367	-	4
L0 001A Bedroom		-	223	-	15
L0 001B Bathroom		-	367	-	4
L0 001B Bedroom		-	225	-	15
L0 001C Bathroom		-	367	-	4
L0 001C Bedroom		-	228	-	14
L0 001D Bathroom		-	367	-	4
L0 001D Bedroom		-	222	-	15
L0 001E Bedroom		-	223	-	15
L0 001E Bedroom		-	367	-	4
L0 001K Kitchen		-	171	-	74
L0 002 Cluster Corridor		-	63	-	45
L0 002A Bathroom		-	367	-	4
L0 002A Bedroom		-	223	-	15
L0 002B Bathroom		-	367	-	4
L0 002B Bedroom		-	220	-	16
L0 002C Bathroom		-	367	-	4
L0 002C Bedroom		-	220	-	16
L0 002D Bathroom		-	367	-	4
L0 002D Bedroom		-	223	-	15
L0 002E Bathroom		-	367	-	4
L0 002E Bedroom		-	225	-	15
L0 002F Bathroom		-	367	-	4
L0 002F Bedroom		-	216	-	16
L0 002K Kitchen		-	170	-	76
L0 003 Accessible Studio		-	191	-	27
L0 003 Bathroom		-	234	-	9
L0 Accessible WC		-	51	-	43
L0 Bin Store		91	-	-	37
L0 Cleaners Store		57	-	-	9
L0 Common Corridor		-	63	-	76

General lighting and display lighting		Luminous efficacy [lm/W]			General lighting [W]
Zone name		Luminaire	Lamp	Display lamp	
	Standard value	60	60	22	
L0 Common Room		-	73	-	197
L0 Lift Lobby		-	59	-	70
L0 Stairs		-	50	-	55
L0 Store Room		42	-	-	21
L0 Study Room		-	73	-	84
L0 Switch Room		119	-	-	42
L1 101 Cluster Corridor		-	50	-	55
L1 101A Bathroom		-	184	-	4
L1 101A Bedroom		-	111	-	15
L1 101B Bathroom		-	184	-	4
L1 101B Bedroom		-	113	-	15
L1 101C Bathroom		-	184	-	4
L1 101C Bedroom		-	114	-	14
L1 101D Bathroom		-	184	-	4
L1 101D Bedroom		-	111	-	15
L1 101K Kitchen		-	85	-	74
L1 102 Cluster Corridor		-	63	-	45
L1 102A Bathroom		-	367	-	4
L1 102A Bedroom		-	223	-	15
L1 102B Bathroom		-	367	-	4
L1 102B Bedroom		-	220	-	16
L1 102C Bathroom		-	367	-	4
L1 102C Bedroom		-	220	-	16
L1 102D Bathroom		-	367	-	4
L1 102D Bedroom		-	223	-	15
L1 102E Bathroom		-	367	-	4
L1 102E Bedroom		-	225	-	15
L1 102F Bathroom		-	367	-	4
L1 102F Bedroom		-	216	-	16
L1 102K Kitchen		-	170	-	76
L1 103 Adaptable Studio		-	181	-	35
L1 103 Bathroom		-	367	-	4
L1 104 Adaptable Studio		-	181	-	35
L1 104 Bathroom		-	367	-	4
L1 105 Bathroom		-	367	-	4
L1 105 Studio		-	180	-	34
L1 106 Bathroom		-	367	-	4
L1 106 Studio		-	181	-	33
L1 107 Cluster Corridor		-	64	-	42
L1 107A Bathroom		-	367	-	4
L1 107A Bedroom		-	226	-	15
L1 107B Bathroom		-	367	-	4
L1 107B Bedroom		-	229	-	14

General lighting and display lighting		Luminous efficacy [lm/W]			General lighting [W]
Zone name		Luminaire	Lamp	Display lamp	
	Standard value	60	60	22	
L1 107C Bathroom		-	367	-	4
L1 107C Bedroom		-	232	-	14
L1 107D Bathroom		-	367	-	4
L1 107D Bedroom		-	223	-	15
L1 107E Bathroom		-	367	-	4
L1 107E Bedroom		-	223	-	15
L1 107F Bathroom		-	367	-	4
L1 107F Bedroom		-	228	-	14
L1 107K Kitchen		-	177	-	68
L1 Cleaners Store		57	-	-	9
L1 Lift Lobby		-	60	-	91
L1 Stairs		-	50	-	55
L2 201 Cluster Corridor		-	50	-	55
L2 201A Bathroom		-	184	-	4
L2 201A Bedroom		-	111	-	15
L2 201B Bathroom		-	184	-	4
L2 201B Bedroom		-	113	-	15
L2 201C Bathroom		-	184	-	4
L2 201C Bedroom		-	114	-	14
L2 201D Bathroom		-	184	-	4
L2 201D Bedroom		-	111	-	15
L2 201K Kitchen		-	85	-	74
L2 202 Cluster Corridor		-	63	-	45
L2 202A Bathroom		-	367	-	4
L2 202A Bedroom		-	223	-	15
L2 202B Bathroom		-	367	-	4
L2 202B Bedroom		-	220	-	16
L2 202C Bathroom		-	367	-	4
L2 202C Bedroom		-	220	-	16
L2 202D Bathroom		-	367	-	4
L2 202D Bedroom		-	223	-	15
L2 202E Bathroom		-	367	-	4
L2 202E Bedroom		-	225	-	15
L2 202F Bathroom		-	367	-	4
L2 202F Bedroom		-	216	-	16
L2 202K Kitchen		-	170	-	76
L2 203 Adaptable Studio		-	181	-	35
L2 203 Bathroom		-	367	-	4
L2 204 Adaptable Studio		-	181	-	35
L2 204 Bathroom		-	367	-	4
L2 205 Bathroom		-	367	-	4
L2 205 Studio		-	180	-	34
L2 206 Bathroom		-	367	-	4

General lighting and display lighting		Luminous efficacy [lm/W]			General lighting [W]
Zone name		Luminaire	Lamp	Display lamp	
	Standard value	60	60	22	
L2 206 Studio		-	181	-	33
L2 207 Cluster Corridor		-	64	-	42
L2 207A Bathroom		-	367	-	4
L2 207A Bedroom		-	226	-	15
L2 207B Bathroom		-	367	-	4
L2 207B Bedroom		-	229	-	14
L2 207C Bathroom		-	367	-	4
L2 207C Bedroom		-	232	-	14
L2 207D Bathroom		-	367	-	4
L2 207D Bedroom		-	223	-	15
L2 207E Bathroom		-	367	-	4
L2 207E Bedroom		-	223	-	15
L2 207F Bathroom		-	367	-	4
L2 207F Bedroom		-	228	-	14
L2 207K Kitchen		-	177	-	68
L2 Cleaners Store		57	-	-	9
L2 Lift Lobby		-	60	-	91
L2 Stairs		-	50	-	55
L3 301 Cluster Corridor		-	50	-	55
L3 301A Bathroom		-	184	-	4
L3 301A Bedroom		-	111	-	15
L3 301B Bathroom		-	184	-	4
L3 301B Bedroom		-	113	-	15
L3 301C Bathroom		-	184	-	4
L3 301C Bedroom		-	114	-	14
L3 301D Bathroom		-	184	-	4
L3 301D Bedroom		-	111	-	15
L3 301K Kitchen		-	85	-	74
L3 302 Cluster Corridor		-	63	-	45
L3 302A Bathroom		-	367	-	4
L3 302A Bedroom		-	223	-	15
L3 302B Bathroom		-	367	-	4
L3 302B Bedroom		-	220	-	16
L3 302C Bathroom		-	367	-	4
L3 302C Bedroom		-	220	-	16
L3 302D Bathroom		-	367	-	4
L3 302D Bedroom		-	223	-	15
L3 302E Bathroom		-	367	-	4
L3 302E Bedroom		-	225	-	15
L3 302F Bathroom		-	367	-	4
L3 302F Bedroom		-	216	-	16
L3 302K Kitchen		-	170	-	76
L3 303 Adaptable Studio		-	181	-	35

General lighting and display lighting		Luminous efficacy [lm/W]			General lighting [W]
Zone name		Luminaire	Lamp	Display lamp	
	Standard value	60	60	22	
L3 303 Bathroom		-	367	-	4
L3 304 Adaptable Studio		-	181	-	35
L3 304 Bathroom		-	367	-	4
L3 305 Bathroom		-	367	-	4
L3 305 Studio		-	180	-	34
L3 306 Bathroom		-	367	-	4
L3 306 Studio		-	181	-	33
L3 307 Cluster Corridor		-	64	-	42
L3 307A Bathroom		-	367	-	4
L3 307A Bedroom		-	226	-	15
L3 307B Bathroom		-	367	-	4
L3 307B Bedroom		-	229	-	14
L3 307C Bathroom		-	367	-	4
L3 307C Bedroom		-	232	-	14
L3 307D Bathroom		-	367	-	4
L3 307D Bedroom		-	223	-	15
L3 307E Bathroom		-	367	-	4
L3 307E Bedroom		-	223	-	15
L3 307F Bathroom		-	367	-	4
L3 307F Bedroom		-	228	-	14
L3 307K Kitchen		-	177	-	68
L3 Cleaners Store		57	-	-	9
L3 Lift Lobby		-	60	-	91
L3 Stairs		-	50	-	55
L4 401 Cluster Corridor		-	63	-	42
L4 401A Bathroom		-	367	-	4
L4 401A Bedroom		-	223	-	15
L4 401B Bathroom		-	367	-	4
L4 401B Bedroom		-	220	-	16
L4 401C Bathroom		-	367	-	4
L4 401C Bedroom		-	220	-	16
L4 401D Bathroom		-	367	-	4
L4 401D Bedroom		-	223	-	15
L4 401E Bathroom		-	367	-	4
L4 401E Bedroom		-	216	-	16
L4 401K Kitchen		-	170	-	76
L4 402 Bathroom		-	367	-	4
L4 402 Studio		-	180	-	34
L4 403 Bathroom		-	367	-	4
L4 403 Studio		-	181	-	33
L4 404 Bathroom		-	367	-	4
L4 404 Studio		-	181	-	33
L4 405 Cluster Corridor		-	50	-	54

General lighting and display lighting		Luminous efficacy [lm/W]			General lighting [W]
Zone name		Luminaire	Lamp	Display lamp	
	Standard value	60	60	22	
L4 405A Bathroom		-	184	-	4
L4 405A Bedroom		-	113	-	15
L4 405B Bathroom		-	184	-	4
L4 405B Bedroom		-	113	-	15
L4 405C Bathroom		-	184	-	4
L4 405C Bedroom		-	111	-	15
L4 405D Bathroom		-	184	-	4
L4 405D Bedroom		-	111	-	15
L4 405K Kitchen		-	84	-	87
L4 Cleaners Store		57	-	-	9
L4 Lift Lobby		-	69	-	70
L4 Plant Room		89	-	-	93
L4 Stairs		-	50	-	55
L5 501 Cluster Corridor		-	63	-	42
L5 501A Bathroom		-	367	-	4
L5 501A Bedroom		-	223	-	15
L5 501B Bathroom		-	367	-	4
L5 501B Bedroom		-	220	-	16
L5 501C Bathroom		-	367	-	4
L5 501C Bedroom		-	220	-	16
L5 501D Bathroom		-	367	-	4
L5 501D Bedroom		-	223	-	15
L5 501E Bathroom		-	367	-	4
L5 501E Bedroom		-	216	-	16
L5 501K Kitchen		-	170	-	76
L5 502 Bathroom		-	367	-	4
L5 502 Studio		-	180	-	34
L5 503 Bathroom		-	367	-	4
L5 503 Studio		-	181	-	33
L5 504 Bathroom		-	367	-	4
L5 504 Studio		-	181	-	33
L5 Cleaners Store		57	-	-	9
L5 Lift Lobby		-	69	-	70
L5 Roof Access		50	-	-	11
L5 Smoke Shaft		50	-	-	10
L5 Stairs		-	50	-	55

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?
L0 001A Bathroom	N/A	N/A
L0 001A Bedroom	NO (-86%)	NO
L0 001B Bathroom	N/A	N/A
L0 001B Bedroom	NO (-85.7%)	NO

Zone	Solar gain limit exceeded? (%)	Internal blinds used?
L0 001C Bathroom	N/A	N/A
L0 001C Bedroom	NO (-85.4%)	NO
L0 001D Bathroom	N/A	N/A
L0 001D Bedroom	NO (-91.4%)	NO
L0 001E Bedroom	NO (-86.8%)	NO
L0 001E Bedroom	N/A	N/A
L0 002A Bathroom	N/A	N/A
L0 002A Bedroom	NO (-89.7%)	NO
L0 002B Bathroom	N/A	N/A
L0 002B Bedroom	NO (-88.6%)	NO
L0 002C Bathroom	N/A	N/A
L0 002C Bedroom	NO (-86.9%)	NO
L0 002D Bathroom	N/A	N/A
L0 002D Bedroom	NO (-85.6%)	NO
L0 002E Bathroom	N/A	N/A
L0 002E Bedroom	NO (-87.6%)	NO
L0 002F Bathroom	N/A	N/A
L0 002F Bedroom	NO (-89.2%)	NO
L0 003 Accessible Studio	NO (-86.5%)	NO
L0 003 Bathroom	N/A	N/A
L0 Common Room	NO (-75.9%)	NO
L0 Study Room	NO (-86.6%)	NO
L1 101A Bathroom	N/A	N/A
L1 101A Bedroom	NO (-86%)	NO
L1 101B Bathroom	N/A	N/A
L1 101B Bedroom	NO (-85.7%)	NO
L1 101C Bathroom	N/A	N/A
L1 101C Bedroom	NO (-85.4%)	NO
L1 101D Bathroom	N/A	N/A
L1 101D Bedroom	NO (-91.4%)	NO
L1 102A Bathroom	N/A	N/A
L1 102A Bedroom	NO (-89.6%)	NO
L1 102B Bathroom	N/A	N/A
L1 102B Bedroom	NO (-88.2%)	NO
L1 102C Bathroom	N/A	N/A
L1 102C Bedroom	NO (-86.8%)	NO
L1 102D Bathroom	N/A	N/A
L1 102D Bedroom	NO (-85.1%)	NO
L1 102E Bathroom	N/A	N/A
L1 102E Bedroom	NO (-87.6%)	NO
L1 102F Bathroom	N/A	N/A
L1 102F Bedroom	NO (-89.2%)	NO
L1 103 Adaptable Studio	NO (-92.6%)	NO
L1 103 Bathroom	N/A	N/A
L1 104 Adaptable Studio	NO (-92.5%)	NO
L1 104 Bathroom	N/A	N/A
L1 105 Bathroom	N/A	N/A
L1 105 Studio	NO (-86.8%)	NO
L1 106 Bathroom	N/A	N/A

Zone	Solar gain limit exceeded? (%)	Internal blinds used?
L1 106 Studio	NO (-88.6%)	NO
L1 107A Bathroom	N/A	N/A
L1 107A Bedroom	NO (-86.2%)	NO
L1 107B Bathroom	N/A	N/A
L1 107B Bedroom	NO (-85.9%)	NO
L1 107C Bathroom	N/A	N/A
L1 107C Bedroom	NO (-83.1%)	NO
L1 107D Bathroom	N/A	N/A
L1 107D Bedroom	NO (-86.5%)	NO
L1 107E Bathroom	N/A	N/A
L1 107E Bedroom	NO (-85.4%)	NO
L1 107F Bathroom	N/A	N/A
L1 107F Bedroom	NO (-83.7%)	NO
L2 201A Bathroom	N/A	N/A
L2 201A Bedroom	NO (-86%)	NO
L2 201B Bathroom	N/A	N/A
L2 201B Bedroom	NO (-85.7%)	NO
L2 201C Bathroom	N/A	N/A
L2 201C Bedroom	NO (-85.4%)	NO
L2 201D Bathroom	N/A	N/A
L2 201D Bedroom	NO (-91.4%)	NO
L2 202A Bathroom	N/A	N/A
L2 202A Bedroom	NO (-89.5%)	NO
L2 202B Bathroom	N/A	N/A
L2 202B Bedroom	NO (-87.5%)	NO
L2 202C Bathroom	N/A	N/A
L2 202C Bedroom	NO (-86.1%)	NO
L2 202D Bathroom	N/A	N/A
L2 202D Bedroom	NO (-84.7%)	NO
L2 202E Bathroom	N/A	N/A
L2 202E Bedroom	NO (-87.6%)	NO
L2 202F Bathroom	N/A	N/A
L2 202F Bedroom	NO (-89.2%)	NO
L2 203 Adaptable Studio	NO (-92.6%)	NO
L2 203 Bathroom	N/A	N/A
L2 204 Adaptable Studio	NO (-92.4%)	NO
L2 204 Bathroom	N/A	N/A
L2 205 Bathroom	N/A	N/A
L2 205 Studio	NO (-86.7%)	NO
L2 206 Bathroom	N/A	N/A
L2 206 Studio	NO (-88.4%)	NO
L2 207A Bathroom	N/A	N/A
L2 207A Bedroom	NO (-86.2%)	NO
L2 207B Bathroom	N/A	N/A
L2 207B Bedroom	NO (-85.9%)	NO
L2 207C Bathroom	N/A	N/A
L2 207C Bedroom	NO (-82.7%)	NO
L2 207D Bathroom	N/A	N/A
L2 207D Bedroom	NO (-86.4%)	NO

Zone	Solar gain limit exceeded? (%)	Internal blinds used?
L2 207E Bathroom	N/A	N/A
L2 207E Bedroom	NO (-85.2%)	NO
L2 207F Bathroom	N/A	N/A
L2 207F Bedroom	NO (-83.5%)	NO
L3 301A Bathroom	N/A	N/A
L3 301A Bedroom	NO (-86%)	NO
L3 301B Bathroom	N/A	N/A
L3 301B Bedroom	NO (-85.7%)	NO
L3 301C Bathroom	N/A	N/A
L3 301C Bedroom	NO (-85.4%)	NO
L3 301D Bathroom	N/A	N/A
L3 301D Bedroom	NO (-91.4%)	NO
L3 302A Bathroom	N/A	N/A
L3 302A Bedroom	NO (-89%)	NO
L3 302B Bathroom	N/A	N/A
L3 302B Bedroom	NO (-86.5%)	NO
L3 302C Bathroom	N/A	N/A
L3 302C Bedroom	NO (-84.9%)	NO
L3 302D Bathroom	N/A	N/A
L3 302D Bedroom	NO (-83.7%)	NO
L3 302E Bathroom	N/A	N/A
L3 302E Bedroom	NO (-87.2%)	NO
L3 302F Bathroom	N/A	N/A
L3 302F Bedroom	NO (-89.1%)	NO
L3 303 Adaptable Studio	NO (-92.3%)	NO
L3 303 Bathroom	N/A	N/A
L3 304 Adaptable Studio	NO (-92.3%)	NO
L3 304 Bathroom	N/A	N/A
L3 305 Bathroom	N/A	N/A
L3 305 Studio	NO (-86.7%)	NO
L3 306 Bathroom	N/A	N/A
L3 306 Studio	NO (-88.1%)	NO
L3 307A Bathroom	N/A	N/A
L3 307A Bedroom	NO (-86.2%)	NO
L3 307B Bathroom	N/A	N/A
L3 307B Bedroom	NO (-85.9%)	NO
L3 307C Bathroom	N/A	N/A
L3 307C Bedroom	NO (-92.9%)	NO
L3 307D Bathroom	N/A	N/A
L3 307D Bedroom	NO (-85.4%)	NO
L3 307E Bathroom	N/A	N/A
L3 307E Bedroom	NO (-84.9%)	NO
L3 307F Bathroom	N/A	N/A
L3 307F Bedroom	NO (-82.8%)	NO
L4 401A Bathroom	N/A	N/A
L4 401A Bedroom	NO (-86.3%)	NO
L4 401B Bathroom	N/A	N/A
L4 401B Bedroom	NO (-83.6%)	NO
L4 401C Bathroom	N/A	N/A

Zone	Solar gain limit exceeded? (%)	Internal blinds used?
L4 401C Bedroom	NO (-82.9%)	NO
L4 401D Bathroom	N/A	N/A
L4 401D Bedroom	NO (-82.3%)	NO
L4 401E Bathroom	N/A	N/A
L4 401E Bedroom	NO (-88.9%)	NO
L4 402 Bathroom	N/A	N/A
L4 402 Studio	NO (-86.2%)	NO
L4 403 Bathroom	N/A	N/A
L4 403 Studio	NO (-85.6%)	NO
L4 404 Bathroom	N/A	N/A
L4 404 Studio	NO (-93.4%)	NO
L4 405A Bathroom	N/A	N/A
L4 405A Bedroom	NO (-87.8%)	NO
L4 405B Bathroom	N/A	N/A
L4 405B Bedroom	NO (-85.4%)	NO
L4 405C Bathroom	N/A	N/A
L4 405C Bedroom	NO (-84.4%)	NO
L4 405D Bathroom	N/A	N/A
L4 405D Bedroom	NO (-83.6%)	NO
L5 501A Bathroom	N/A	N/A
L5 501A Bedroom	NO (-82%)	NO
L5 501B Bathroom	N/A	N/A
L5 501B Bedroom	NO (-82.3%)	NO
L5 501C Bathroom	N/A	N/A
L5 501C Bedroom	NO (-82.3%)	NO
L5 501D Bathroom	N/A	N/A
L5 501D Bedroom	NO (-82%)	NO
L5 501E Bathroom	N/A	N/A
L5 501E Bedroom	NO (-88.2%)	NO
L5 502 Bathroom	N/A	N/A
L5 502 Studio	NO (-86.1%)	NO
L5 503 Bathroom	N/A	N/A
L5 503 Studio	NO (-85.6%)	NO
L5 504 Bathroom	N/A	N/A
L5 504 Studio	NO (-93.4%)	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?	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]	2425.5	2425.5
External area [m ²]	2332.7	2332.7
Weather	MAN	MAN
Infiltration [m ³ /hm ² @ 50Pa]	5	3
Average conductance [W/K]	744.31	1256.51
Average U-value [W/m ² K]	0.32	0.54
Alpha value* [%]	11.88	10

* Percentage of the building's average heat transfer coefficient which is due to thermal bridging

Building Use

% Area Building Type

A1/A2 Retail/Financial and Professional services
A3/A4/A5 Restaurants and Cafes/Drinking Est./Takeaways
B1 Offices and Workshop businesses
B2 to B7 General Industrial and Special Industrial Groups
B8 Storage or Distribution
C1 Hotels
C2 Residential Institutions: Hospitals and Care Homes
C2 Residential Institutions: Residential schools

100 C2 Residential Institutions: Universities and colleges

C2A Secure Residential Institutions
Residential spaces
D1 Non-residential Institutions: Community/Day Centre
D1 Non-residential Institutions: Libraries, Museums, and Galleries
D1 Non-residential Institutions: Education
D1 Non-residential Institutions: Primary Health Care Building
D1 Non-residential Institutions: Crown and County Courts
D2 General Assembly and Leisure, Night Clubs, and Theatres
Others: Passenger terminals
Others: Emergency services
Others: Miscellaneous 24hr activities
Others: Car Parks 24 hrs
Others: Stand alone utility block

Energy Consumption by End Use [kWh/m²]

	Actual	Notional
Heating	11.36	21.06
Cooling	0.03	0.09
Auxiliary	4.32	2.48
Lighting	7.9	9.65
Hot water	30.27	42.56
Equipment*	17.83	17.83
TOTAL **	53.88	75.84

* 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]	38.82	69.53
Primary energy* [kWh/m ²]	165.4	188.06
Total emissions [kg/m ²]	28	34.5

* 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] Other local room heater - unfanned, [HS] Direct or storage electric heater, [HFT] Electricity, [CFT] Electricity										
	Actual	93.2	0	25.9	0	0	1	0	1	0
	Notional	98.6	0	31.8	0	0	0.86	0	----	----
[ST] Other local room heater - unfanned, [HS] Direct or storage electric heater, [HFT] Electricity, [CFT] Electricity										
	Actual	0.2	0	0.1	0	11.3	1	0	1	0
	Notional	1	0	0.3	0	12.9	0.86	0	----	----
[ST] Other local room heater - unfanned, [HS] Direct or storage electric heater, [HFT] Electricity, [CFT] Electricity										
	Actual	38.3	0	13.3	0	2.6	0.8	0	1	0
	Notional	100.3	0	32.3	0	3.4	0.86	0	----	----
[ST] Split or multi-split system, [HS] Heat pump (electric): air source, [HFT] Electricity, [CFT] Electricity										
	Actual	250.1	7.8	15	0.4	0	4.62	5.4	4.96	7.61
	Notional	280.8	22.8	30.5	1.7	0	2.56	3.79	----	----
[ST] Split or multi-split system, [HS] Heat pump (electric): air source, [HFT] Electricity, [CFT] Electricity										
	Actual	25.2	17.8	1.5	0.8	8.8	4.66	6.13	5	8.64
	Notional	55.7	39.7	6.1	2.9	4	2.56	3.79	----	----
[ST] Other local room heater - unfanned, [HS] Direct or storage electric heater, [HFT] Electricity, [CFT] Electricity										
	Actual	31.1	0	10.8	0	3.1	0.8	0	1	0
	Notional	71.9	0	23.2	0	3.3	0.86	0	----	----
[ST] Other local room heater - unfanned, [HS] Direct or storage electric heater, [HFT] Electricity, [CFT] Electricity										
	Actual	22.6	0	7.8	0	3.7	0.8	0	1	0
	Notional	58.5	0	18.9	0	3.3	0.86	0	----	----
[ST] Other local room heater - unfanned, [HS] Direct or storage electric heater, [HFT] Electricity, [CFT] Electricity										
	Actual	27	0	9.4	0	2.7	0.8	0	1	0
	Notional	50.9	0	16.4	0	3	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	0.16	L300001C:Surf[2]
Floor	0.2	0.2	L0000001:Surf[0]
Roof	0.15	0.15	L1000007:Surf[2]
Windows, roof windows, and rooflights	1.5	1.12	L0000002:Surf[4]
Personnel doors	1.5	1.76	L4000028:Surf[2]
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	4.96