

Project name

81-84 Chalk Farm Road

As designed

Date: Tue Oct 31 11:16:02 2023

Administrative information**Building Details**

Address: 81-84 Chalk Farm Road, LONDON, NW1 8AL

Certification tool

Calculation engine: SBEM

Calculation engine version: v6.1.e.0

Interface to calculation engine: DesignBuilder SBEM

Interface to calculation engine version: v7.2.0

BRUKL compliance module version: v6.1.e.1

Certifier details

Name: Neil Ingham

Telephone number:

Address: Holborn Tower, 137-144 High Holborn London, WC1V 6PL

Foundation area [m²]: 290.85**The CO₂ emission and primary energy rates of the building must not exceed the targets**

The building does not comply with England Building Regulations Part L 2021

Target CO ₂ emission rate (TER), kgCO ₂ /m ² annum	6.4	
Building CO ₂ emission rate (BER), kgCO ₂ /m ² annum	13.21	
Target primary energy rate (TPER), kWh _{PE} /m ² annum	39.62	
Building primary energy rate (BPER), kWh _{PE} /m ² annum	93.64	
Do the building's emission and primary energy rates exceed the targets?	BER > TER	BPER > TPER

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

Fabric element	U _{a-Limit}	U _{a-Calc}	U _{i-Calc}	First surface with maximum value
Walls*	0.26	0.55	0.55	Floor 0 - WCs_W_7
Floors	0.18	0.25	0.25	Floor 0 - WCs_S_3
Pitched roofs	0.16	-	-	No heat loss pitched roofs
Flat roofs	0.18	0.18	0.18	Floor 1 - Stairs_R_4
Windows** and roof windows	1.6	1.8	1.8	Floor 1 - Stairs_G_10
Rooflights***	2.2	-	-	No external rooflights
Personnel doors [^]	1.6	1.8	1.8	Floor 0 - Circ and stairs_D_12
Vehicle access & similar large doors	1.3	-	-	No external vehicle access doors
High usage entrance doors	3	-	-	No external high usage entrance doors

U_{a-Limit} = Limiting area-weighted average U-values [W/(m²K)]U_{i-Calc} = Calculated maximum individual element U-values [W/(m²K)]U_{a-Calc} = Calculated area-weighted average U-values [W/(m²K)]

* 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. *** Values for rooflights refer to the horizontal position.

[^] For fire doors, limiting U-value is 1.8 W/m²K

NB: Neither roof ventilators (inc. smoke vents) nor swimming pool basins are modelled or checked against the limiting standards by the tool.

Air permeability	Limiting standard	This building
m ³ /(h.m ²) at 50 Pa	8	25

Building services

For details on the standard values listed below, system-specific guidance, and additional regulatory requirements, refer to the Approved Documents.

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- Gas heat

	Heating efficiency	Cooling efficiency	Radiant efficiency	SFP [W/(l/s)]	HR efficiency
This system	0.84	-	-	-	-
Standard value	0.93*	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 gas single boiler systems <=2 MW output and overall for multi-boiler systems. For single boiler systems >2 MW or any individual boiler in a multi-boiler system, limiting efficiency is 0.88.					

2- Gas heat/Mech Cooling

	Heating efficiency	Cooling efficiency	Radiant efficiency	SFP [W/(l/s)]	HR efficiency
This system	0.84	2.6	-	-	-
Standard value	0.93*	5	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 gas single boiler systems <=2 MW output and overall for multi-boiler systems. For single boiler systems >2 MW or any individual boiler in a multi-boiler system, limiting efficiency is 0.88.					

1- From Main heating

	Water heating efficiency	Storage loss factor [kWh/litre per day]
This building	Hot water provided by HVAC system	0.002
Standard value	N/A	N/A

Zone-level mechanical ventilation, exhaust, and terminal units

ID	System type in the Approved Documents
A	Local supply or extract ventilation units
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 balanced supply and extract ventilation system
E	Local balanced supply and extract ventilation units
F	Other local ventilation units
G	Fan assisted terminal variable air volume units
H	Fan coil units
I	Kitchen extract with the fan remote from the zone and a grease filter
NB: Limiting SFP may be increased by the amounts specified in the Approved Documents if the installation includes particular components.	

Zone name	SFP [W/(l/s)]										HR efficiency	
	A	B	C	D	E	F	G	H	I	Zone	Standard	
ID of system type												
Standard value	0.3	1.1	0.5	2.3	2	0.5	0.5	0.4	1			
Floor 0 - WCs	-	-	0.5	-	-	-	-	-	-	-	N/A	
Floor 0 - WC Amb	-	-	0.5	-	-	-	-	-	-	-	N/A	
Floor 1 - WCs	-	-	0.5	-	-	-	-	-	-	-	N/A	
Floor 2 - WCs	-	-	0.5	-	-	-	-	-	-	-	N/A	
Floor 0 - Classrooms 1	-	-	-	-	0.5	-	-	-	-	0.7	N/A	
Floor 0 - Office 1	-	-	-	-	0.5	-	-	-	-	0.7	N/A	
Floor 0 - Office	-	-	-	-	0.5	-	-	-	-	0.7	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	2.3	2	0.5	0.5	0.4	1			
Floor 0 - Breakout	-	-	-	-	0.5	-	-	-	-	-	0.7	N/A
Floor 1 - Breakout	-	-	-	-	0.5	-	-	-	-	-	0.7	N/A
Floor 1 - Classrooms	-	-	-	-	0.5	-	-	-	-	-	0.7	N/A
Floor 1 - Office	-	-	-	-	0.5	-	-	-	-	-	0.7	N/A
Floor 1 - Machine room	-	-	-	-	0.5	-	-	-	-	-	0.7	N/A
Floor 1 - Servers	-	-	0.5	-	-	-	-	-	-	-	-	N/A
Floor 2 - Classrooms back	-	-	-	-	0.5	-	-	-	-	-	0.7	N/A
Floor 2 - Classrooms	-	-	-	-	0.5	-	-	-	-	-	0.7	N/A
Floor 2 - Breakout	-	-	-	-	0.5	-	-	-	-	-	0.7	N/A
Floor 2 - Offices	-	-	-	-	0.5	-	-	-	-	-	0.7	N/A

General lighting and display lighting		General luminaire	Display light source	
Zone name		Efficacy [lm/W]	Efficacy [lm/W]	Power density [W/m ²]
Standard value	95	80	0.3	
Floor 0 - Store	51	-	-	
Floor 0 - Stores	51	-	-	
Floor 1 - Store 1	51	-	-	
Floor 1 - Store 2	51	-	-	
Floor 1 - Store	51	-	-	
Floor 1 - Plant	51	-	-	
Floor 0 - WCs	51	-	-	
Floor 0 - WC Amb	51	-	-	
Floor 0 - Circ and stairs	51	-	-	
Floor 0 - Circ and lift	51	-	-	
Floor 1 - Stairs	51	-	-	
Floor 1 - WCs	51	-	-	
Floor 1 - Circ	51	-	-	
Floor 2 - Circ	51	-	-	
Floor 2 - WCs	51	-	-	
Floor 2 - Stairs	51	-	-	
Floor 2 - Staff room	51	-	-	
Floor 0 - Classrooms 1	51	-	-	
Floor 0 - Office 1	51	-	-	
Floor 0 - Office	51	-	-	
Floor 0 - Breakout	51	-	-	
Floor 0 - Reception	51	51	2.647	
Floor 1 - Breakout	51	-	-	
Floor 1 - Classrooms	51	-	-	
Floor 1 - Office	51	-	-	
Floor 1 - Machine room	51	-	-	
Floor 1 - Servers	51	-	-	
Floor 2 - Classrooms back	51	-	-	
Floor 2 - Classrooms	51	-	-	

General lighting and display lighting		General luminaire	Display light source	
Zone name		Efficacy [lm/W]	Efficacy [lm/W]	Power density [W/m ²]
	Standard value	95	80	0.3
Floor 2 - Breakout		51	-	-
Floor 2 - Offices		51	-	-

The spaces in the building should have appropriate passive control measures to limit solar gains in summer

Zone	Solar gain limit exceeded? (%)	Internal blinds used?
Floor 0 - Stores	N/A	N/A
Floor 0 - Classrooms 1	N/A	N/A
Floor 0 - Office 1	N/A	N/A
Floor 0 - Office	NO (-58.6%)	NO
Floor 0 - Breakout	YES (+95.1%)	NO
Floor 0 - Reception	NO (-35.5%)	NO
Floor 1 - Breakout	YES (+12.8%)	NO
Floor 1 - Classrooms	N/A	N/A
Floor 1 - Office	NO (-38.5%)	NO
Floor 1 - Machine room	N/A	N/A
Floor 1 - Servers	N/A	N/A
Floor 2 - Classrooms back	N/A	N/A
Floor 2 - Classrooms	NO (-19.7%)	NO
Floor 2 - Breakout	N/A	N/A
Floor 2 - Offices	N/A	N/A

Regulation 25A: Consideration of high efficiency 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
Floor area [m ²]	918.6	918.6
External area [m ²]	1178.2	1178.2
Weather	LON	LON
Infiltration [m ³ /hm ² @ 50Pa]	25	3
Average conductance [W/K]	621.28	479.94
Average U-value [W/m ² K]	0.53	0.41
Alpha value* [%]	11.99	21.16

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

Building Use

% Area Building Type

Retail/Financial and Professional Services
 Restaurants and Cafes/Drinking Establishments/Takeaways
 Offices and Workshop Businesses
 General Industrial and Special Industrial Groups
 Storage or Distribution
 Hotels
 Residential Institutions: Hospitals and Care Homes
 Residential Institutions: Residential Schools
 Residential Institutions: Universities and Colleges
 Secure Residential Institutions
 Residential Spaces
 Non-residential Institutions: Community/Day Centre
 Non-residential Institutions: Libraries, Museums, and Galleries

100 Non-residential Institutions: Education

Non-residential Institutions: Primary Health Care Building
 Non-residential Institutions: Crown and County Courts
 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	25.56	10.54
Cooling	7.66	2.87
Auxiliary	4.26	4.75
Lighting	17.68	6.39
Hot water	17.96	18.84
Equipment*	17.34	17.34
TOTAL**	73.11	43.39

* 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	10.57
Wind turbines	0	0
CHP generators	0	0
Solar thermal systems	0	0
<i>Displaced electricity</i>	<i>0</i>	<i>10.57</i>

Energy & CO₂ Emissions Summary

	Actual	Notional
Heating + cooling demand [MJ/m ²]	152.97	116.24
Primary energy [kWh _{PE} /m ²]	93.64	39.62
Total emissions [kg/m ²]	13.21	6.4

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] No Heating or Cooling									
Actual	443.9	110.4	0	0	0	0	0	0	0
Notional	141.5	119.3	0	0	0	0	0	----	----
[ST] Central heating using water: radiators, [HS] LTHW boiler, [HFT] Natural Gas, [CFT] Natural Gas									
Actual	149.7	14.7	55.4	0	3.5	0.75	0	0.84	0
Notional	82.6	89.1	26.7	0	3.4	0.86	0	----	----
[ST] Split or multi-split system, [HS] LTHW boiler, [HFT] Natural Gas, [CFT] Electricity									
Actual	41.9	76.2	14.8	11.5	4.6	0.78	1.85	0.84	2.6
Notional	14	68	4.5	4.3	3.9	0.86	4.4	----	----

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

Project name

81-84 Chalk Farm Road

As designed

Date: Tue Oct 31 11:49:53 2023

Administrative information**Building Details**

Address: 81-84 Chalk Farm Road, LONDON, NW1 8AL

Certifier details

Name: Neil Ingham

Telephone number:

Address: Holborn Tower, 137-144 High Holborn London, WC1V 6PL

Certification tool

Calculation engine: SBEM

Calculation engine version: v6.1.e.0

Interface to calculation engine: DesignBuilder SBEM

Interface to calculation engine version: v7.2.0

BRUKL compliance module version: v6.1.e.1

Foundation area [m²]: 83.64**The CO₂ emission and primary energy rates of the building must not exceed the targets**

The building does not comply with England Building Regulations Part L 2021

Target CO ₂ emission rate (TER), kgCO ₂ /m ² annum	3.12	
Building CO ₂ emission rate (BER), kgCO ₂ /m ² annum	4.73	
Target primary energy rate (TPER), kWh _{PE} /m ² annum	32.32	
Building primary energy rate (BPER), kWh _{PE} /m ² annum	49.33	
Do the building's emission and primary energy rates exceed the targets?	BER > TER	BPER > TPER

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

Fabric element	U _{a-Limit}	U _{a-Calc}	U _{i-Calc}	First surface with maximum value
Walls*	0.26	0.18	0.18	Floor 3 - WCs_W_4
Floors	0.18	0.18	0.18	Floor 3 - WCs_F_3
Pitched roofs	0.16	0.15	0.15	Floor 3 - WCs_R_7
Flat roofs	0.18	0.15	0.15	Floor 3 - WCs_R_8
Windows** and roof windows	1.6	1.4	1.4	Block 2 - Circulation_G_7
Rooflights***	2.2	-	-	No external rooflights
Personnel doors [^]	1.6	-	-	No external personnel doors
Vehicle access & similar large doors	1.3	-	-	No external vehicle access doors
High usage entrance doors	3	-	-	No external high usage entrance doors

U_{a-Limit} = Limiting area-weighted average U-values [W/(m²K)]U_{i-Calc} = Calculated maximum individual element U-values [W/(m²K)]U_{a-Calc} = Calculated area-weighted average U-values [W/(m²K)]

* 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. *** Values for rooflights refer to the horizontal position.

[^] For fire doors, limiting U-value is 1.8 W/m²K

NB: Neither roof ventilators (inc. smoke vents) nor swimming pool basins are modelled or checked against the limiting standards by the tool.

Air permeability	Limiting standard	This building
m ³ /(h.m ²) at 50 Pa	8	3

Building services

For details on the standard values listed below, system-specific guidance, and additional regulatory requirements, refer to the Approved Documents.

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 Rads

	Heating efficiency	Cooling efficiency	Radiant efficiency	SFP [W/(l/s)]	HR efficiency
This system	1	-	-	-	-
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- Notional Heat Pump

	Heating efficiency	Cooling efficiency	Radiant efficiency	SFP [W/(l/s)]	HR efficiency
This system	2.69	5.89	-	-	-
Standard value	2.5*	5	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.					

1- PoU

	Water heating efficiency	Storage loss factor [kWh/litre per day]
This building	1	0.003
Standard value	1	N/A

Zone-level mechanical ventilation, exhaust, and terminal units

ID	System type in the Approved Documents
A	Local supply or extract ventilation units
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 balanced supply and extract ventilation system
E	Local balanced supply and extract ventilation units
F	Other local ventilation units
G	Fan assisted terminal variable air volume units
H	Fan coil units
I	Kitchen extract with the fan remote from the zone and a grease filter
NB: Limiting SFP may be increased by the amounts specified in the Approved Documents if the installation includes particular components.	

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	2.3	2	0.5	0.5	0.4	1		
Floor 3 - WCs		-	-	0.5	-	-	-	-	-	-	-	N/A
Floor 3 - Offices		-	-	-	-	1	-	-	-	-	0.8	N/A
Floor 3 - Offices		-	-	-	-	1	-	-	-	-	0.8	N/A
Floor 3 - Offices		-	-	-	-	1	-	-	-	-	0.8	N/A

Zone name	General lighting and display lighting	General luminaire	Display light source	
		Efficacy [lm/W]	Efficacy [lm/W]	Power density [W/m ²]
	Standard value	95	80	0.3
Floor 3 - WCs		100	-	-

General lighting and display lighting		General luminaire	Display light source	
Zone name		Efficacy [lm/W]	Efficacy [lm/W]	Power density [W/m ²]
	Standard value	95	80	0.3
Block 2 - Circulation		100	-	-
Floor 3 - Offices		120	-	-
Floor 3 - Offices		120	-	-
Floor 3 - Offices		120	-	-

The spaces in the building should have appropriate passive control measures to limit solar gains in summer

Zone	Solar gain limit exceeded? (%)	Internal blinds used?
Floor 3 - Offices	NO (-51.7%)	NO
Floor 3 - Offices	NO (-22.7%)	NO
Floor 3 - Offices	YES (+13.6%)	NO

Regulation 25A: Consideration of high efficiency 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
Floor area [m ²]	250.9	250.9
External area [m ²]	666.7	666.7
Weather	LON	LON
Infiltration [m ³ /hm ² @ 50Pa]	3	3
Average conductance [W/K]	171.22	175.53
Average U-value [W/m ² K]	0.26	0.26
Alpha value* [%]	20.13	22.18

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

Building Use

% Area Building Type

Retail/Financial and Professional Services
 Restaurants and Cafes/Drinking Establishments/Takeaways
 Offices and Workshop Businesses
 General Industrial and Special Industrial Groups
 Storage or Distribution
 Hotels
 Residential Institutions: Hospitals and Care Homes
 Residential Institutions: Residential Schools
 Residential Institutions: Universities and Colleges
 Secure Residential Institutions
 Residential Spaces
 Non-residential Institutions: Community/Day Centre
 Non-residential Institutions: Libraries, Museums, and Galleries

100 Non-residential Institutions: Education

Non-residential Institutions: Primary Health Care Building
 Non-residential Institutions: Crown and County Courts
 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	16.81	10.91
Cooling	2	1.67
Auxiliary	2.31	1.36
Lighting	4.6	5.97
Hot water	6.1	5.3
Equipment*	21.55	21.55
TOTAL**	31.82	25.21

* 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	3.82
Wind turbines	0	0
CHP generators	0	0
Solar thermal systems	0	0
<i>Displaced electricity</i>	<i>0</i>	<i>3.82</i>

Energy & CO₂ Emissions Summary

	Actual	Notional
Heating + cooling demand [MJ/m ²]	131.47	119.3
Primary energy [kWh _{PE} /m ²]	49.33	32.32
Total emissions [kg/m ²]	4.73	3.12

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] Other local room heater - unfanned, [HS] Room heater, [HFT] Electricity, [CFT] Natural Gas									
Actual	101	34.3	35.1	0	1.8	0.8	0	1	0
Notional	93.5	54.8	19.4	0	2.2	1.34	0	----	----
[ST] Split or multi-split system, [HS] ASHP, [HFT] Electricity, [CFT] Electricity									
Actual	84.2	45.6	8.9	2.9	2.5	2.64	4.4	2.69	5.89
Notional	68.6	38	7.2	2.4	1	2.64	4.4	----	----

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