

## Project name

**551-557 Finchley Road Baseline**

As designed

Date: Thu Nov 14 15:08:41 2019

## Administrative information

## Building Details

Address: Address 1, Address 2, City, Postcode

## Certification tool

Calculation engine: SBEM

Calculation engine version: v5.6.a.2

Interface to calculation engine: Virtual Environment

Interface to calculation engine version: v7.0.12

BRUKL compliance check version: v5.6.a.1

## 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 CO<sub>2</sub> emission rate for the building must not exceed the target

The building does not comply with England Building Regulations Part L 2013

CO <sub>2</sub> emission rate from the notional building, kgCO <sub>2</sub> /m <sup>2</sup> .annum	75.2
Target CO <sub>2</sub> emission rate (TER), kgCO <sub>2</sub> /m <sup>2</sup> .annum	75.2
Building CO <sub>2</sub> emission rate (BER), kgCO <sub>2</sub> /m <sup>2</sup> .annum	104.4
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 <sub>a</sub> -Limit	U <sub>a</sub> -Calc	U <sub>i</sub> -Calc	Surface where the maximum value occurs*
Wall**	0.35	1.38	1.69	LG000004_W1
Floor	0.25	0.83	1.62	LG000004_F
Roof	0.25	1.5	2.44	LG000004_C
Windows***, roof windows, and rooflights	2.2	4.59	5.6	GF000002_W-1_O0
Personnel doors	2.2	2.2	2.2	GF000002_W1_O1
Vehicle access & similar large doors	1.5	-	-	"No external vehicle access doors"
High usage entrance doors	3.5	-	-	"No external high usage entrance doors"
U <sub>a</sub> -Limit = Limiting area-weighted average U-values [W/(m <sup>2</sup> K)]				
U <sub>a</sub> -Calc = Calculated area-weighted average U-values [W/(m <sup>2</sup> K)]		U <sub>i</sub> -Calc = Calculated maximum individual element U-values [W/(m <sup>2</sup> 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 <sup>3</sup> /(h.m <sup>2</sup> ) at 50 Pa	10	15

## 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- Main system Cooling VRF

	Heating efficiency	Cooling efficiency	Radiant efficiency	SFP [W/(l/s)]	HR efficiency
<b>This system</b>	2.5	2.5	-	-	-
<b>Standard value</b>	2.5*	2.6	N/A	N/A	N/A
<b>Automatic monitoring &amp; targeting with alarms for out-of-range values for this HVAC system</b>					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- Main system No Cooling

	Heating efficiency	Cooling efficiency	Radiant efficiency	SFP [W/(l/s)]	HR efficiency
<b>This system</b>	0.84	-	-	-	-
<b>Standard value</b>	0.91*	N/A	N/A	N/A	N/A
<b>Automatic monitoring &amp; targeting with alarms for out-of-range values for this HVAC system</b>					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- Main system Cooling VRF Retail

	Heating efficiency	Cooling efficiency	Radiant efficiency	SFP [W/(l/s)]	HR efficiency
<b>This system</b>	2.5	2.5	-	-	-
<b>Standard value</b>	2.5*	2.6	N/A	N/A	N/A
<b>Automatic monitoring &amp; targeting with alarms for out-of-range values for this HVAC system</b>					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.					

### 1- SYST0001-DHW

	Water heating efficiency	Storage loss factor [kWh/litre per day]
<b>This building</b>	0.84	-
<b>Standard value</b>	0.8	N/A

### 2- SYST0000-DHW

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

### 3- SYST0002-DHW

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

**Local mechanical ventilation, exhaust, and terminal units**

ID	System type in Non-domestic Building Services Compliance Guide
A	Local supply or extract ventilation units serving a single area
B	Zonal supply system where the fan is remote from the zone
C	Zonal extract system where the fan is remote from the zone
D	Zonal supply and extract ventilation units serving a single room or zone with heating and heat recovery
E	Local supply and extract ventilation system serving a single area with heating and heat recovery
F	Other local ventilation units
G	Fan-assisted terminal VAV unit
H	Fan coil units
I	Zonal extract system where the fan is remote from the zone with grease filter

Zone name	ID of system type	SFP [W/(l/s)]									HR efficiency	
		A	B	C	D	E	F	G	H	I	Zone	Standard
	Standard value	0.3	1.1	0.5	1.9	1.6	0.5	1.1	0.5	1		
LGF Meeting Room		0.4	-	-	-	-	-	-	-	-	-	N/A
LGF Gym		0.4	-	-	-	-	-	-	-	-	-	N/A
GF Cafe		0.4	-	-	-	-	-	-	-	-	-	N/A
LGF Apart Hotel		0.4	-	-	-	-	-	-	-	-	-	N/A
LGF Apart Hotel		0.4	-	-	-	-	-	-	-	-	-	N/A
LGF Apart Hotel		0.4	-	-	-	-	-	-	-	-	-	N/A
LGF Apart Hotel		0.4	-	-	-	-	-	-	-	-	-	N/A
LGF Apart Hotel		0.4	-	-	-	-	-	-	-	-	-	N/A
LGF Apart Hotel		0.4	-	-	-	-	-	-	-	-	-	N/A
GF Reception		0.4	-	-	-	-	-	-	-	-	-	N/A
GF Apart Hotel		0.4	-	-	-	-	-	-	-	-	-	N/A
GF Apart Hotel		0.4	-	-	-	-	-	-	-	-	-	N/A
GF Apart Hotel		0.4	-	-	-	-	-	-	-	-	-	N/A
GF Apart Hotel		0.4	-	-	-	-	-	-	-	-	-	N/A
GF Apart Hotel		0.4	-	-	-	-	-	-	-	-	-	N/A
GF Apart Hotel		0.4	-	-	-	-	-	-	-	-	-	N/A
GF Apart Hotel		0.4	-	-	-	-	-	-	-	-	-	N/A
2F Apart Hotel		0.4	-	-	-	-	-	-	-	-	-	N/A
2F Apart Hotel		0.4	-	-	-	-	-	-	-	-	-	N/A
2F Apart Hotel		0.4	-	-	-	-	-	-	-	-	-	N/A
2F Apart Hotel		0.4	-	-	-	-	-	-	-	-	-	N/A
2F Apart Hotel		0.4	-	-	-	-	-	-	-	-	-	N/A
2F Apart Hotel		0.4	-	-	-	-	-	-	-	-	-	N/A
1F Apart Hotel		0.4	-	-	-	-	-	-	-	-	-	N/A
1F Apart Hotel		0.4	-	-	-	-	-	-	-	-	-	N/A
1F Apart Hotel		0.4	-	-	-	-	-	-	-	-	-	N/A
1F Apart Hotel		0.4	-	-	-	-	-	-	-	-	-	N/A
1F Apart Hotel		0.4	-	-	-	-	-	-	-	-	-	N/A
3F Apart Hotel		0.4	-	-	-	-	-	-	-	-	-	N/A
3F Apart Hotel		0.4	-	-	-	-	-	-	-	-	-	N/A
3F Apart Hotel		0.4	-	-	-	-	-	-	-	-	-	N/A
3F Apart Hotel		0.4	-	-	-	-	-	-	-	-	-	N/A

Zone name	SFP [W/(l/s)]									HR efficiency		
	ID of system type	A	B	C	D	E	F	G	H	I	Zone	Standard
Standard value	0.3	1.1	0.5	1.9	1.6	0.5	1.1	0.5	1			
4F Apart Hotel	0.4	-	-	-	-	-	-	-	-	-	-	N/A
4F Apart Hotel	0.4	-	-	-	-	-	-	-	-	-	-	N/A
1F Apart Hotel	0.4	-	-	-	-	-	-	-	-	-	-	N/A
1F Apart Hotel	0.4	-	-	-	-	-	-	-	-	-	-	N/A
2F Apart Hotel	0.4	-	-	-	-	-	-	-	-	-	-	N/A
4F Apart Hotel	0.4	-	-	-	-	-	-	-	-	-	-	N/A
GF Retail	0.4	-	-	-	-	-	-	-	-	-	-	N/A

Zone name	General lighting and display lighting Standard value	Luminous efficacy [lm/W]			General lighting [W]
		Luminaire	Lamp	Display lamp	
		60	60	22	
LGF Meeting Room		51	-	-	271
LGF Gym		-	60	-	83
GF Cafe		-	60	30	553
LGF Lift		-	60	-	26
LGF Apart Hotel		-	60	-	116
LGF Apart Hotel		-	60	-	110
LGF Apart Hotel		-	60	-	108
LGF Apart Hotel		-	60	-	108
LGF Apart Hotel		-	60	-	123
LGF Apart Hotel		-	60	-	127
LGF WC		-	60	-	44
LGF WC		-	60	-	46
LGF Stairs		-	60	-	43
LGF Corridor		-	60	-	105
LGF Corridor		-	60	-	102
GF Corridor		-	60	-	219
GF Reception		-	60	30	233
GF Lift		-	60	-	37
GF Apart Hotel		-	60	-	134
GF Apart Hotel		-	60	-	118
GF Apart Hotel		-	60	-	129
GF Stairs		-	60	-	31
GF Lift		-	60	-	37
GF Apart Hotel		-	60	-	127
GF Apart Hotel		-	60	-	136
GF Apart Hotel		-	60	-	122
2F Stairs		-	60	-	54
2F Apart Hotel		-	60	-	127
2F Stairs		-	60	-	65
2F Apart Hotel		-	60	-	96
2F Apart Hotel		-	60	-	124
2F Apart Hotel		-	60	-	102

General lighting and display lighting		Luminous efficacy [lm/W]			
Zone name		Luminaire	Lamp	Display lamp	General lighting [W]
	<b>Standard value</b>	60	60	22	
2F Apart Hotel		-	60	-	102
2F Apart Hotel		-	60	-	102
1F Apart Hotel		-	60	-	153
1F Apart Hotel		-	60	-	104
1F Apart Hotel		-	60	-	104
1F Apart Hotel		-	60	-	104
1F Apart Hotel		-	60	-	132
1F Stairs		-	60	-	75
1F Lift		-	60	-	30
1F Stairs		-	60	-	66
3F Apart Hotel		-	60	-	89
3F Apart Hotel		-	60	-	110
3F Apart Hotel		-	60	-	153
3F Corridor		-	60	-	152
3F Apart Hotel		-	60	-	103
3F Lift		-	60	-	25
4F Apart Hotel		-	60	-	103
4F Apart Hotel		-	60	-	100
4F Lift		-	60	-	25
4F Corridor		-	60	-	56
1F Apart Hotel		-	60	-	129
1F Apart Hotel		-	60	-	150
LGF WC		-	60	-	52
2F Apart Hotel		-	60	-	100
2F Lift		-	60	-	23
4F Stairs		-	60	-	30
4F Apart Hotel		-	60	-	112
GF Retail		-	60	30	560

**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?
LGF Meeting Room	N/A	N/A
LGF Gym	N/A	N/A
GF Cafe	NO (-26.7%)	NO
LGF Apart Hotel	NO (-76.4%)	NO
LGF Apart Hotel	NO (-25.8%)	NO
LGF Apart Hotel	NO (-35.1%)	NO
LGF Apart Hotel	NO (-35.1%)	NO
LGF Apart Hotel	NO (-35.1%)	NO
LGF Apart Hotel	NO (-35.1%)	NO
GF Reception	YES (+21.4%)	NO
GF Apart Hotel	NO (-86%)	NO
GF Apart Hotel	NO (-53.8%)	NO

Zone	Solar gain limit exceeded? (%)	Internal blinds used?
GF Apart Hotel	NO (-59.5%)	NO
GF Apart Hotel	NO (-64%)	NO
GF Apart Hotel	NO (-64.1%)	NO
GF Apart Hotel	NO (-62.1%)	NO
2F Apart Hotel	NO (-70.4%)	NO
2F Apart Hotel	N/A	N/A
2F Apart Hotel	NO (-88.5%)	NO
2F Apart Hotel	NO (-63.2%)	NO
2F Apart Hotel	NO (-64.2%)	NO
2F Apart Hotel	NO (-64.2%)	NO
1F Apart Hotel	NO (-74.4%)	NO
1F Apart Hotel	NO (-63.3%)	NO
1F Apart Hotel	NO (-64.2%)	NO
1F Apart Hotel	NO (-64.2%)	NO
1F Apart Hotel	NO (-37.7%)	NO
3F Apart Hotel	NO (-81.1%)	NO
3F Apart Hotel	NO (-86.6%)	NO
3F Apart Hotel	NO (-67.5%)	NO
3F Apart Hotel	NO (-38.7%)	NO
4F Apart Hotel	NO (-75.7%)	NO
4F Apart Hotel	NO (-74.6%)	NO
1F Apart Hotel	NO (-73.8%)	NO
1F Apart Hotel	NO (-48.9%)	NO
2F Apart Hotel	NO (-89.1%)	NO
4F Apart Hotel	N/A	N/A
GF Retail	YES (+0.7%)	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?	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 <sup>2</sup> ]	1571.1	1571.1
External area [m <sup>2</sup> ]	1746	1746
Weather	LON	LON
Infiltration [m <sup>3</sup> /hm <sup>2</sup> @ 50Pa]	15	3
Average conductance [W/K]	2782.47	899.78
Average U-value [W/m <sup>2</sup> K]	1.59	0.52
Alpha value* [%]	5.74	18.34

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

## Building Use

% Area	Building Type
2	A1/A2 Retail/Financial and Professional services
6	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
92	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/m<sup>2</sup>]

	Actual	Notional
Heating	164.75	59.49
Cooling	3.22	2.65
Auxiliary	6.49	4.34
Lighting	12.7	14.36
Hot water	253.83	234.75
Equipment*	18.11	18.11
<b>TOTAL**</b>	<b>440.99</b>	<b>315.6</b>

\* 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/m<sup>2</sup>]

	Actual	Notional
Photovoltaic systems	0	0
Wind turbines	0	0
CHP generators	0	0
Solar thermal systems	0	0

## Energy & CO<sub>2</sub> Emissions Summary

	Actual	Notional
Heating + cooling demand [MJ/m <sup>2</sup> ]	601.12	300.07
Primary energy* [kWh/m <sup>2</sup> ]	594.16	427.89
Total emissions [kg/m <sup>2</sup> ]	104.4	75.2

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

## HVAC Systems Performance

System Type	Heat dem MJ/m <sup>2</sup>	Cool dem MJ/m <sup>2</sup>	Heat con kWh/m <sup>2</sup>	Cool con kWh/m <sup>2</sup>	Aux con kWh/m <sup>2</sup>	Heat SSEFF	Cool SSEER	Heat gen SEFF	Cool gen SEER
<b>[ST] Split or multi-split system, [HS] Heat pump (electric): air source, [HFT] Electricity, [CFT] Electricity</b>									
<b>Actual</b>	893.4	223.3	101.2	33.2	2	2.45	1.87	2.5	2.5
<b>Notional</b>	281.1	358	32.1	27.6	2	2.43	3.6	----	----
<b>[ST] Central heating using water: radiators, [HS] LTHW boiler, [HFT] Natural Gas, [CFT] Electricity</b>									
<b>Actual</b>	490.6	62.5	172.7	0	7	0.79	0	0.84	0
<b>Notional</b>	185.6	82.2	63	0	4.6	0.82	0	----	----
<b>[ST] Split or multi-split system, [HS] Heat pump (electric): air source, [HFT] Electricity, [CFT] Electricity</b>									
<b>Actual</b>	398.7	182.1	45.2	27.1	1.3	2.45	1.87	2.5	2.5
<b>Notional</b>	58.8	268.8	6.7	20.7	1.3	2.43	3.6	----	----

### Key to terms

Heat dem [MJ/m <sup>2</sup> ]	= Heating energy demand
Cool dem [MJ/m <sup>2</sup> ]	= Cooling energy demand
Heat con [kWh/m <sup>2</sup> ]	= Heating energy consumption
Cool con [kWh/m <sup>2</sup> ]	= Cooling energy consumption
Aux con [kWh/m <sup>2</sup> ]	= 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 <sub>i-Typ</sub>	U <sub>i-Min</sub>	Surface where the minimum value occurs*
Wall	0.23	0.28	LG000008_W1
Floor	0.2	0.22	GF000002_F
Roof	0.15	0.18	LG000000_C
Windows, roof windows, and rooflights	1.5	1.8	LG000000_W2_O0
Personnel doors	1.5	2.2	GF000002_W1_O1
Vehicle access & similar large doors	1.5	-	"No external vehicle access doors"
High usage entrance doors	1.5	-	"No external high usage entrance doors"
U <sub>i-Typ</sub> = Typical individual element U-values [W/(m <sup>2</sup> K)]		U <sub>i-Min</sub> = Minimum individual element U-values [W/(m <sup>2</sup> K)]	
* There might be more than one surface where the minimum U-value occurs.			

Air Permeability	Typical value	This building
m <sup>3</sup> /(h.m <sup>2</sup> ) at 50 Pa	5	15