

Project name

16 Strawberry Hill Road

As designed

Date: Thu Aug 29 15:35:33 2024

Administrative information

Building Details

Address: 16 Strawberry Hill Road, Twickenham, Greater London, TW1 4PT

Certifier details

Name: Mr Sean Mills

Telephone number: 01202280062

Address: Aerodrome Studios, 2-8 Airfield Rd., Christchurch, BH23 3TS

Certification tool

Calculation engine: SBEM

Calculation engine version: v6.1.e.1

Interface to calculation engine: Virtual Environment

Interface to calculation engine version: v7.0.26

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

Foundation area [m²]: 141.2

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	4.18
Building CO ₂ emission rate (BER), kgCO ₂ /m ² annum	7.14
Target primary energy rate (TPER), kWh _{PE} /m ² annum	43.95
Building primary energy rate (BPER), kWh _{PE} /m ² annum	73.54
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	0.54	0.55	0G000002_W2
Floors	0.18	0.25	0.25	0G000002_F
Pitched roofs	0.16	0.16	0.16	2S00000D_C
Flat roofs	0.18	0.18	0.21	0G000002_C_A0
Windows** and roof windows	1.6	1.6	1.6	0G000004_W1_O0
Rooflights***	2.2	1.58	1.58	2S000001_C_O0
Personnel doors [^]	1.6	2.2	2.2	0G000006_W1_O0
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	YES
Whole building electric power factor achieved by power factor correction	<0.9

1- ASHP (Heat) 2.5 GLA

	Heating efficiency	Cooling efficiency	Radiant efficiency	SFP [W/(l/s)]	HR efficiency
This system	2.5	-	-	-	-
Standard value	2.5*	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 all types >12 kW output, except absorption and gas engine heat pumps.					

2- ASHP (DHW) 2.5 GLA

	Heating efficiency	Cooling efficiency	Radiant efficiency	SFP [W/(l/s)]	HR efficiency
This system	2.5	-	-	-	-
Standard value	2.5*	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 all types >12 kW output, except absorption and gas engine heat pumps.					

1- SYST0001-DHW

	Water heating efficiency	Storage loss factor [kWh/litre per day]
This building	Hot water provided by HVAC system	-
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	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		
0GF WC		0.3	-	-	-	-	-	-	-	-	-	N/A
0GF Bathroom		0.3	-	-	-	-	-	-	-	-	-	N/A
0GF Kitchen		0.3	-	-	-	-	-	-	-	-	-	N/A
0GF Kitchen		0.3	-	-	-	-	-	-	-	-	-	N/A
0GF Shower		0.3	-	-	-	-	-	-	-	-	-	N/A
0GF Shower		0.3	-	-	-	-	-	-	-	-	-	N/A
0GF Kitchen		0.3	-	-	-	-	-	-	-	-	-	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 value	0.3	1.1	0.5	2.3	2	0.5	0.5	0.4	1		
1FF WC	0.3	-	-	-	-	-	-	-	-	-	N/A
1FF Ensuite	0.3	-	-	-	-	-	-	-	-	-	N/A
1FF WC	0.3	-	-	-	-	-	-	-	-	-	N/A
1FF Bathroom	0.3	-	-	-	-	-	-	-	-	-	N/A
2SF Bathroom	0.3	-	-	-	-	-	-	-	-	-	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	
0GF WC	75	-	-	
0GF Bathroom	75	-	-	
0GF Kitchen	75	-	-	
0GF Guest Room	75	-	-	
0GF Halls	75	-	-	
0GF Guest Room	75	-	-	
0GF Living Room	75	-	-	
0GF Reception	75	-	-	
0GF Halls	75	-	-	
0GF Kitchen	75	-	-	
0GF Dining	75	-	-	
0GF Halls	75	-	-	
0GF Halls	75	-	-	
0GF Shower	75	-	-	
0GF Shower	75	-	-	
0GF Kitchen	75	-	-	
0GF Kitchen Larder	75	-	-	
0GF Kitchen Larder	75	-	-	
0GF Halls	75	-	-	
1FF Halls	75	-	-	
1FF Walk in Closet	75	-	-	
1FF WC	75	-	-	
1FF Ensuite	75	-	-	
1FF Master Bedroom	75	-	-	
1FF Halls	75	-	-	
1FF Bedroom 3	75	-	-	
1FF WC	75	-	-	
1FF Bathroom	75	-	-	
1FF Bedroom 2	75	-	-	
2SF Hallway	75	-	-	
2SF Cupboard	75	-	-	
2SF Bedroom 5	75	-	-	
2SF Bedroom 4	75	-	-	
2SF Bathroom	75	-	-	

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
2SF Hallway		75	-	-
2SF Bedroom 3		75	-	-
2SF Play Room		75	-	-

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?
0GF Kitchen	NO (-28.9%)	NO
0GF Guest Room	NO (-48.7%)	NO
0GF Guest Room	NO (-50.5%)	NO
0GF Living Room	NO (-59.9%)	NO
0GF Kitchen	NO (-80.2%)	NO
0GF Dining	NO (-70%)	NO
0GF Kitchen	NO (-80.4%)	NO
0GF Kitchen Larder	N/A	N/A
0GF Kitchen Larder	N/A	N/A
1FF Walk in Closet	N/A	N/A
1FF Master Bedroom	NO (-61.8%)	NO
1FF Bedroom 3	NO (-64.5%)	NO
1FF Bedroom 2	NO (-57.7%)	NO
2SF Cupboard	N/A	N/A
2SF Bedroom 5	NO (-65.1%)	NO
2SF Bedroom 4	NO (-72.4%)	NO
2SF Bedroom 3	NO (-86.7%)	NO
2SF Play Room	NO (-83%)	NO

Regulation 25A: Consideration of high efficiency 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
Floor area [m ²]	423.6	423.6
External area [m ²]	891.5	891.5
Weather	LON	LON
Infiltration [m ³ /hm ² @ 50Pa]	25	3
Average conductance [W/K]	436.75	384.83
Average U-value [W/m ² K]	0.49	0.43
Alpha value* [%]	22.56	29.89

* 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

100 Residential Spaces

Non-residential Institutions: Community/Day Centre
 Non-residential Institutions: Libraries, Museums, and Galleries
 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	34.27	12.43
Cooling	0	0
Auxiliary	1.45	3.82
Lighting	5.91	4.76
Hot water	5.48	8.19
Equipment*	16.11	16.11
TOTAL**	47.11	29.2

* 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
<i>Displaced electricity</i>	<i>0</i>	<i>0</i>

Energy & CO₂ Emissions Summary

	Actual	Notional
Heating + cooling demand [MJ/m ²]	310.39	178.05
Primary energy [kWh _{PE} /m ²]	73.54	43.95
Total emissions [kg/m ²]	7.14	4.18

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] Central heating using water: radiators, [HS] ASHP, [HFT] Electricity, [CFT] Electricity									
Actual	289.6	20.7	34.3	0	1.4	2.35	0	2.5	0
Notional	118.1	59.9	12.4	0	1.5	2.64	0	----	----

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