

## Project name

**Stag Brewery-Building 5-Hotel-Green**

As designed

Date: Thu Jan 20 21:31:26 2022

## Administrative information

## Building Details

Address: London, SW14 7ED

## Owner Details

Name: Name

Telephone number: Phone

Address: Street Address, City, Postcode

## Certification tool

Calculation engine: Apache

Calculation engine version: 7.0.12

Interface to calculation engine: IES Virtual Environment

Interface to calculation engine version: 7.0.12

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

## 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

CO <sub>2</sub> emission rate from the notional building, kgCO <sub>2</sub> /m <sup>2</sup> .annum	36.2
Target CO <sub>2</sub> emission rate (TER), kgCO <sub>2</sub> /m <sup>2</sup> .annum	36.2
Building CO <sub>2</sub> emission rate (BER), kgCO <sub>2</sub> /m <sup>2</sup> .annum	23.8
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	0.2	0.2	01000001:Surf[2]
Floor	0.25	0.2	0.2	BS000000:Surf[0]
Roof	0.25	0.2	0.2	01000001:Surf[0]
Windows***, roof windows, and rooflights	2.2	1.6	1.6	01000001:Surf[1]
Personnel doors	2.2	-	-	No Personnel doors in building
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 <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	5

## 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- Stag Brewery VRF

	Heating efficiency	Cooling efficiency	Radiant efficiency	SFP [W/(l/s)]	HR efficiency
<b>This system</b>	0.91	5	0	0	0.85
<b>Standard value</b>	0.91*	2.6	N/A	N/A	0.65
<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.					

### 2- Stag Brewery Radiator

	Heating efficiency	Cooling efficiency	Radiant efficiency	SFP [W/(l/s)]	HR efficiency
<b>This system</b>	1	-	0	0	-
<b>Standard value</b>	N/A	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

"No HWS in project, or hot water is provided by HVAC system"

### 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	Zone	Standard
	<b>Standard value</b>	0.3	1.1	0.5	1.9	1.6	0.5	1.1	0.5	1		
01_4ppl Suite 4		-	-	-	0.3	-	-	-	-	-	-	N/A
01_4ppl Suite4 Bathroom		-	-	0.5	-	-	-	-	-	-	-	N/A
01_2ppl Suite 3		-	-	-	0.3	-	-	-	-	-	-	N/A
01_2ppl Suite 3 Bathroom		-	-	0.5	-	-	-	-	-	-	-	N/A
01_2ppl Suite 5		-	-	-	0.3	-	-	-	-	-	-	N/A
01_2ppl Suite 5 Bathroom		-	-	0.5	-	-	-	-	-	-	-	N/A
01_2ppl Suite 6		-	-	-	0.3	-	-	-	-	-	-	N/A
01_2ppl Suite 6 Bathroom		-	-	0.5	-	-	-	-	-	-	-	N/A
01_2ppl Suite 7		-	-	-	0.3	-	-	-	-	-	-	N/A
01_2ppl Suite 7 Bathroom		-	-	0.5	-	-	-	-	-	-	-	N/A
01_2ppl Suite 8		-	-	-	0.3	-	-	-	-	-	-	N/A
01_2ppl Suite 8 Bathroom		-	-	0.5	-	-	-	-	-	-	-	N/A

Zone name	SFP [W/(l/s)]									HR efficiency	
	ID of system type	A	B	C	D	E	F	G	H		
Standard value	0.3	1.1	0.5	1.9	1.6	0.5	1.1	0.5	1	Zone	Standard
01_2ppl Suite 9 Bathroom	-	-	0.5	-	-	-	-	-	-	-	N/A
01_2ppl Suite 9	-	-	-	0.3	-	-	-	-	-	-	N/A
01_2ppl Suite 10	-	-	-	0.3	-	-	-	-	-	-	N/A
01_2ppl Suite 10 Bathroom	-	-	0.5	-	-	-	-	-	-	-	N/A
01_4ppl Suite 11 Suite	-	-	-	0.3	-	-	-	-	-	-	N/A
01_2ppl Suite 2	-	-	-	0.3	-	-	-	-	-	-	N/A
01_2ppl Suite 2 Bathroom	-	-	0.5	-	-	-	-	-	-	-	N/A
01_2ppl Suite 1	-	-	-	0.3	-	-	-	-	-	-	N/A
01_2ppl Suite 1 Bathroom	-	-	0.5	-	-	-	-	-	-	-	N/A
01_4ppl Suite 11 Bathroom	-	-	0.5	-	-	-	-	-	-	-	N/A
02_2ppl Suite 15	-	-	-	0.3	-	-	-	-	-	-	N/A
02_4ppl Suite 16	-	-	-	0.3	-	-	-	-	-	-	N/A
02_2ppl Suite 12 Bathroom	-	-	0.5	-	-	-	-	-	-	-	N/A
02_2ppl Suite 13 Bathroom	-	-	0.5	-	-	-	-	-	-	-	N/A
02_2ppl Suite 14 Bathroom	-	-	0.5	-	-	-	-	-	-	-	N/A
02_2ppl Suite 14	-	-	-	0.3	-	-	-	-	-	-	N/A
02_2ppl Suite 15 Bathroom	-	-	0.5	-	-	-	-	-	-	-	N/A
02_2ppl Suite 16	-	-	-	0.3	-	-	-	-	-	-	N/A
02_2ppl Suite 12	-	-	-	0.3	-	-	-	-	-	-	N/A
02_2ppl Suite 13	-	-	-	0.3	-	-	-	-	-	-	N/A
00_Hotel Reception	-	-	-	0.3	-	-	-	-	-	-	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		
01_4ppl Suite 4	-	64	-		273
01_4ppl Suite4 Bathroom	-	115	-		40
01_Housekeeping/Storage	90	-	-		21
01_2ppl Suite 3	-	72	-		163
01_2ppl Suite 3 Bathroom	-	110	-		44
01_2ppl Suite 5	-	73	-		119
01_2ppl Suite 5 Bathroom	-	118	-		39
01_2ppl Suite 6	-	75	-		110
01_2ppl Suite 6 Bathroom	-	118	-		39
01_2ppl Suite 7	-	72	-		99
01_2ppl Suite 7 Bathroom	-	118	-		39
01_2ppl Suite 8	-	71	-		129
01_2ppl Suite 8 Bathroom	-	104	-		49
01_2ppl Suite 9 Bathroom	-	115	-		40
01_2ppl Suite 9	-	77	-		104
01_2ppl Suite 10	-	75	-		111
01_2ppl Suite 10 Bathroom	-	115	-		40
01_4ppl Suite 11 Suite	-	64	-		244

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	
01_2ppl Suite 2		-	72	-	124
01_2ppl Suite 2 Bathroom		-	107	-	46
01_Hotel Corridor		-	90	-	115
01_Hotel Lounge		-	61	-	289
01_2ppl Suite 1		-	68	-	187
01_2ppl Suite 1 Bathroom		-	111	-	44
01_4ppl Suite 11 Bathroom		-	96	-	60
02_2ppl Suite 15		-	65	-	155
02_Hotel Corridor		-	90	-	87
02_4ppl Suite 16		-	61	-	326
02_2ppl Suite 12 Bathroom		-	99	-	40
02_2ppl Suite 13 Bathroom		-	85	-	62
02_2ppl Suite 14 Bathroom		-	101	-	38
02_2ppl Suite 14		-	67	-	167
02_2ppl Suite 15 Bathroom		-	93	-	45
02_2ppl Suite 16		-	96	-	28
02_2ppl Suite 12		-	65	-	166
02_2ppl Suite 13		-	66	-	159
00_Hotel Reception		-	93	90	177
BS01_Hotel BOH		90	-	-	135
BS01_Hotel BOH		90	-	-	206

**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?
01_4ppl Suite 4	NO (-45.2%)	NO
01_2ppl Suite 3	NO (-69.9%)	NO
01_2ppl Suite 5	NO (-37.4%)	NO
01_2ppl Suite 6	NO (-41.6%)	NO
01_2ppl Suite 7	NO (-55.5%)	NO
01_2ppl Suite 8	NO (-74.6%)	NO
01_2ppl Suite 9	NO (-49.7%)	NO
01_2ppl Suite 10	NO (-43%)	NO
01_4ppl Suite 11 Suite	NO (-55.3%)	NO
01_2ppl Suite 2	NO (-51.9%)	NO
01_2ppl Suite 1	NO (-54%)	NO
02_2ppl Suite 15	N/A	N/A
02_4ppl Suite 16	NO (-95%)	NO
02_2ppl Suite 14	NO (-64.4%)	NO
02_2ppl Suite 16	N/A	N/A
02_2ppl Suite 12	NO (-85.4%)	NO
02_2ppl Suite 13	NO (-78.9%)	NO
00_Hotel Reception	NO (-23.5%)	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**

<b>Were alternative energy systems considered and analysed as part of the design process?</b>	<b>NO</b>
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> ]	1169.6	1169.6
External area [m <sup>2</sup> ]	1342.6	1342.6
Weather	LON	LON
Infiltration [m <sup>3</sup> /hm <sup>2</sup> @ 50Pa]	5	3
Average conductance [W/K]	371.42	502.02
Average U-value [W/m <sup>2</sup> K]	0.28	0.37
Alpha value* [%]	9.84	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
<b>100 C1 Hotels</b>
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	26.34	23.92
Cooling	0.43	1.33
Auxiliary	3.84	3.56
Lighting	7.54	9.08
Hot water	129.69	128.34
Equipment*	5.82	5.82
<b>TOTAL**</b>	<b>167.85</b>	<b>166.22</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> ]	93.79	100.68
Primary energy* [kWh/m <sup>2</sup> ]	125.28	173.86
Total emissions [kg/m <sup>2</sup> ]	23.8	36.2

\* 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] LTHW boiler, [HFT] Natural Gas, [CFT] Electricity</b>									
<b>Actual</b>	43.4	12.7	13.5	0.9	2.4	0.89	3.74	0.91	5
<b>Notional</b>	48.8	40.1	15.7	2.9	4.5	0.86	3.79	----	----
<b>[ST] Central heating using water: radiators, [HS] District heating, [HFT] District Heating, [CFT] Electricity</b>									
<b>Actual</b>	387.2	0	114.5	0	7.5	0.94	0	1	0
<b>Notional</b>	342.4	0	95.1	0	8.5	1	0	----	----
<b>[ST] No Heating or Cooling</b>									
<b>Actual</b>	0	0	0	0	0	0	0	0	0
<b>Notional</b>	0	0	0	0	0	0	0	----	----

### 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	0.2	01000001:Surf[2]
Floor	0.2	0.2	BS000000:Surf[0]
Roof	0.15	0.2	01000001:Surf[0]
Windows, roof windows, and rooflights	1.5	1.6	01000001:Surf[1]
Personnel doors	1.5	-	No Personnel doors in building
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 <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	5