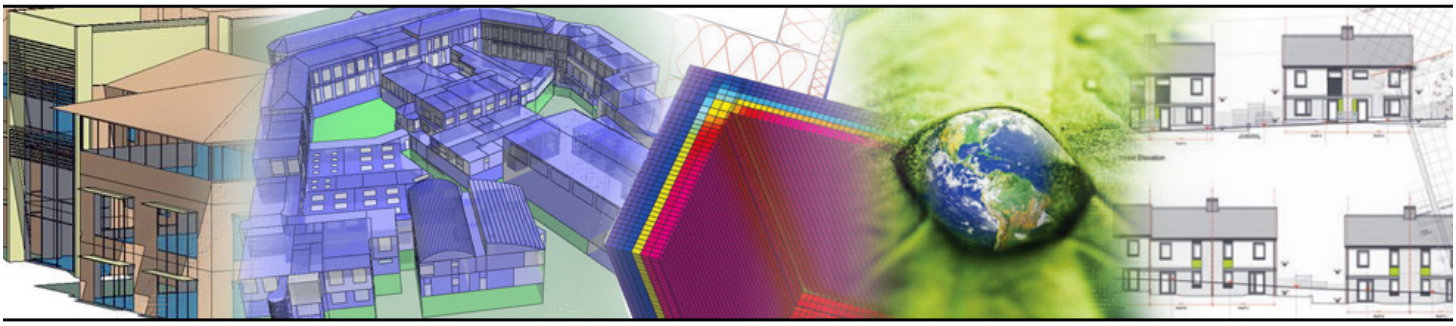


Part L2a Compliance Report

City Pride, Pavilion Building, Canary Wharf

'Shell & Core'

'As-Built'

Stroma Reference: 08-19-79388 S4 - Pavilion
Date: 26/05/2023
Prepared for: Chalegrove Properties Limited

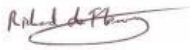
Contents

1. Summary

Building Regulations: Part L2a: 2010 (Eng&Wales)

Assessment Methodology: Level 5 DSM

Software: IES-VE v2022

Prepared by	Checked by
	
Richard de Fleury BEng (hons) MSc	Jonathan Teale BSc (hons)
Principal Sustainability Consultant	Senior Sustainability Consultant
Date: 26/05/2023	**Date:** 26/05/2023
File reference:	08-19-79388 S4 - Pavilion

Version	Status	Date	Change Summary
S1	Design Stage	11/05/23	-
S2	Design Stage	17/05/23	Typo corrected
S3	Design Stage	24/05/23	District System added & lighting improved
S4	As Built Stage	26/05/23	As built run

2. Results

2.1. Criterion 1 – Achieving the BER

Results show the shell & core development 'as-built' has the potential to comply with the requirements of ADL2a Criterion 1; the Building Emission Rate is less than the Target Emission Rate.

Building area or, part	**Pavilion Building**	
Notional Emissions Rate	83.0	kg.CO_2/m^2/yr
Target Emissions Rate (TER)	83.0	
Building Emissions Rate (BER)	82.3	
Compliance margin	0.8	%
Pass/Fail	**PASS**	

Table 1. Criterion 1 summary

As-designed Part L documentation is required by Building Control to confirm that the proposed design meets the requirements of Approved Document Part L prior to construction. Upon building completion or the first fit-out, the Part L calculation must be revised to represent the as-built and as-installed specification. Please refer to the appendix of this report for details of the as-built evidence requirements.

2.2. Criterion 2 – Limits on Design Flexibility

Design limits are outlined within Approved Document Part L2a and Non-domestic Building Services Compliance Guide. The appended BRUKL document outlines the building performance against each of the respective design limits.

The following parameters exceed the recommended design limits;

Parameter	Proposed Value	Limiting Value
N/A		

Table 2. Criterion 2 non-compliance summary

2.3. Criterion 3 – Limiting the Effects of Solar Gain in Summer

The cumulative solar gain for all applicable zones has been calculated and compared against the recommended limits. The appended BRUKL document outlines all results.

A number of zones fail to comply with the requirements of Criterion 3. Specification or architectural changes are required to reduce the level of transmitted solar gain.

- **0003 Café / Bar**

2.4. EPC Asset Rating

A preliminary EPC has been produced at this stage based upon the details outlined within this report.

Metric	Pavilion Building
Asset Rating	44
Band	B

Table 3. EPC result

A lodged Shell and Core EPC has been provided with the following results. Note: a number of assumptions within these have been reduced to backstop values in accordance with the EPC conventions:

Metric	Pavilion Building
Asset Rating	55
Band	C

Table 4. Lodged Shell and Core EPC results

The lodged EPC can be downloaded from here: https://find-energy-certificate.service.gov.uk/energy-certificate/3632-3247-7892-2542-4725

Upon practical completion, a final EPC must be produced representing the as-built and as-installed specification and lodged onto the central Landmark register. EPCs must be generated within the most recently Government approved software version irrespective of the version used for the Part L compliance assessment. Therefore, Stroma Technology cannot be held responsible for any variations within the EPC rating as a result of specification, software or, regulatory changes.

3. Building Regulations Summary

Part L2a: 2010 (England & Wales)

Approved Document Part L2a: 2010 came into force on 1st October, superseding the former Part L2a: 2006. The 2010 Part L largely follows the same methodology as before with a number of key changes intended to reduce energy consumption and promote a more holistic design approach. This assessment considers the first 3 of 5 criteria, the key objectives of which are unchanged.

Criterion 1 – achieving the BER
Compliance is demonstrated where the Building Emission Rate (BER) is less than the Target Emission Rate (TER). Carbon Dioxide emissions of the building are calculated using Government approved software encompassing the Architectural form, fabric and building services specifications. Unlike 2006, the TER is derived directly from the Notional building enabling a direct comparison between a *compliant* and the actual specification.

Criterion 2 – limits on design flexibility
In order to guide the building specification towards higher levels of energy efficiency and in recognition of technical development, the minimum performance limits for building services have been improved. These are all set out within the 2010 Non-Domestic Building Services Compliance Guide. 'Backstop' or, 'limiting' U-values for building fabric and air permeability remain largely unchanged from 2006.

Criterion 3 – limiting the effects of solar gain in summer
Criterion 3 now considers the cumulative solar gain only, for all occupied or mechanically cooled spaces. The objective is to steer design towards a reduction for the need or, the installed capacity of air conditioning systems. In order to demonstrate compliance, the solar gain aggregated over the period April to September must not exceed a limit derived for a room of the same size with a pre-defined area of glazing and glass specification. The respective solar gain limit is dependent upon whether the room type is considered 'top lit' or 'side lit'.

This development has been assessed by trained and accredited Energy Assessors using Government approved compliance software by Integrated Environmental Solutions (IES). This report details the basis of modelling and a summary of the results, including the BRUKL document included as an appendix.

Energy Performance Certificates must always be generated using the most up to date software version, in accordance with European legislation. Therefore, Stroma Technology cannot be held responsible for any change in result owning to building specification, legislative or software revisions.

4. Model Geometry

Architectural drawings have been provided by Tim Richardson of Chalegrove on 21/04/23.

Drawing type	Drawing by	Drawing reference	Revision
Basement Floor Plan	Squire & Partners	P_B1_G200_102	RD
Ground Floor Plan	Squire & Partners	P_00_G200_100	RD
Elevation 1	KFK	EL-6000	AB
Elevation 2	KFK	EL-6001	AB
Elevation 3	KFK	EL-6002	AB

Table 5. Drawings used for model

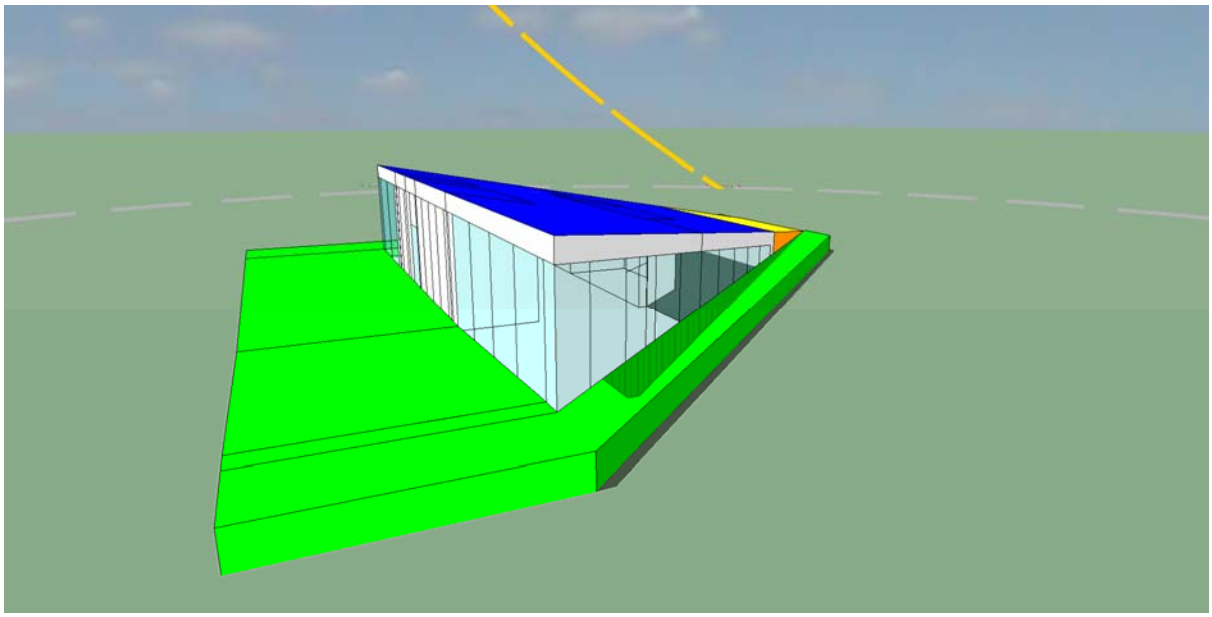


Figure 1. IES thermal model

5. Thermal Envelope

Construction information has been provided by Tim Richardson of Chalegrove on 21/04/23.

Opaque element	Construction (type and insulation)	U-value ($W/m^2.K$)	Metal Cladding		Assumption
Exposed Floor to car park	**Concrete, insulation, plasterboard**	**0.25**		NO	☒
External Wall – above ground	**Metal, insulation, plasterboard**	**0.19**		NO	☒
External Wall – Basement / below ground	**Ground, concrete, insulation**	**0.35**		NO	☒
Internal Wall – Heated to unheated spaces	**Block, insulation, block**	**0.35**		NO	☒
Roof	Green roof, insulation, concrete	0.18		NO	☐
Roof to basement rooms	**Ground finish, insulation, concrete**	**0.18**		NO	☒
Spandrel Panels	Glazed	1.00		NO	☐

Table 6. Opaque building elements

Thermal bridging has been accounted for in accordance with the approved dynamic simulation modelling procedure.

Translucent element	Construction type	Overall U-value ($W/m^2.K$)	Solar g-value	Light trans.	Assumption
Windows	Double glazed	1.00	0.46	0.675	☐

Table 7. Transparent building elements

Air permeability ($m^3/h.m^2$ @ 50 Pa)	Tested by	Date of test	Assumption
5.60	ATSPACE LTD	13/04/23	☐

Table 8. Air infiltration

6. Mechanical and Electrical Services

6.1. Heating, Cooling and Ventilation

The mechanical performance specification and relevant drawings have been **assumed** as this is a shell and core assessment.

	System reference:	01 - Dist Htg Clg FCU			
	Areas served:	Refer to Appendix A			
	Type:	Fan coil systems			
Heating	**Source:**	**District heating**	**Fuel:**	**Grid supplied electricity**	
	Seasonal efficiency:	CO_2 Factor =0.119; Primary Energy Factor = 0.52 - refer to Appendix B	**Heating circulator pump:**	**Variable speed, differential sensor across pump**	
Cooling	**Source:**	**Air cooled**			
	Seasonal efficiency (SEER):	3.94	**Nominal Efficiency (EER):**	2.91	
Ventilation	**Central AHU SFP:**	**1.20 W/l/s**			
	AHU CEN leakage class:	**Class L2**	**Ductwork leakage class:**	**Untested - Use default**	
	Heat recovery type:	**Cross plate**	**Heat recovery effectiveness:**	**0.8**	
	Provision for energy metering:	**Yes**	**Alarms for 'out-of-range' values:**	**No**	

Table 9. HVAC system parameters

	System reference:	02 - Elec panel remote extract			
	Areas served:	Refer to Appendix A			
	Type:	Other local room heater - unfanned			
Heating	**Source:**	**Direct or storage electric heater**	**Fuel:**	**Grid supplied electricity**	
	Seasonal efficiency:	**100%**	**Heating circulator pump:**	N/A	
	Provision for energy metering:	**Yes**	**Alarms for 'out-of-range' values:**	**No**	

Table 10. HVAC system parameters

System reference:		03 - Instant Elec DHW					
Areas served:		Refer to Appendix A					
Type:		**Instantaneous hot water only**					
Efficiency:		**100%**	**Fuel:**	**Grid supplied electricity**			
Storage volume:		**None**	**Storage insulation or losses:**		**N/A**		
Secondary circulation:	**N/A**	**Loop length (m):**	**N/A**	**Losses (W/m):**	**N/A**	**Pump Power (kW):**	**N/A**

Table 11. DHW system parameters

All assumptions **(in red)** must be reviewed by the design team and confirmed to Stroma Tech.

Variations made to the input parameters are likely to change the overall Building Emissions Rate and therefore may lead to non-compliance.

6.2. Mechanical Ventilation

Mechanical ventilation details have been **assumed** as this is shell and core assessment and applied to the thermal model accordingly. Specific Fan Powers (SFPs) are reported within the appended BRUKL output document against the limiting value for each fan category.

Detail	Source	Assumption
Fan types	**Assumed – refer to Appendix A**	☒
Specific Fan Power	**Assumed – refer to Appendix A**	☒
Extract Flow Rate	**Assumed – refer to Appendix A**	☒

Table 12. Mechanical ventilation data source

All assumptions **(in red)** must be reviewed by the design team and confirmed to Stroma Technology.

Variations made to the input parameters are likely to change the overall Building Emissions Rate and therefore may lead to non-compliance.

6.3. Internal Lighting

Internal fixed lighting details have been **assumed** as this is shell and core assessment and applied to the thermal model accordingly.

Principal information format: **Luminaire specification - No calculations carried out**

Detail	Information Source	Assumption
Luminaire Type/Performance	**Assumed – refer to Appendix A**	☒
Presence detection	**Assumed – refer to Appendix A**	☒
Daylight control	**Assumed – refer to Appendix A**	☒
Sensor parasitic power	**Assumed – refer to Appendix A**	☒

Table 13. Internal lighting details

All assumptions **(in red)** must be reviewed by the design team and confirmed to Stroma Technology.

Variations made to the input parameters are likely to change the overall Building Emissions Rate and therefore may lead to non-compliance.

Model input parameters are tabulated within Appendix A of this report.

6.4. BMS and Power Factor Correction

A BMS facilty will not be installed with the capacity for AMT and alarms for out-of-range values.

A Power Factor Correction device will not or, has not been installed. Therefore, the default Factor of <0.9 has been applied.

Evidence of both the BMS functionality and achieved Power Factor will be required at as-built stage.

7. Renewable Energy Technology

No renewable energy technologies have been incorporated into this development.

Appendix A. Model Input Parameters

Room Name	Floor area (m²)	System			Mechanical Ventilation								Lighting and Controls												
		Heating / Cooling / Vent System	DHW System	Heating Plant Radiant Fraction	Supply	Specific Fan Power (W/(l/s))	Extract	Flow Rate (ACH^{-1})	Specific Fan Power (W/(l/s))	Is fan remote from room?	Heat Recovery Type	Heat Recovery Seasonal Efficiency	Lamp Efficacy (lm/W)	Light Output Ratio	Luminaire Efficacy (lm/W)	Display Lighting Uses Efficient Lamps?	Lamp Efficacy (lm)	Display Lighting Time Switching?	Daylight Control	Control Type	Sensor Type	Sensor Time-switch	Sensor Parasitic Power (W/m²)	Occupancy Sensing	Sensor Parasitic Power (W/m²)	Sensor Time-switch
B107 Staff Welfare	13.307	01 - Dist Htg Clg FCU	03 - Instant Elec DHW	0	Zonal Supply and Extract - SFP = 1.2 W/l/s & FCU SFP = 0.4 W/l/s						Plate	0.8	90	1	90	-		-	-	-	-	-	-	NONE	-	-
0003 Cafe / Bar	226.375	01 - Dist Htg Clg FCU	03 - Instant Elec DHW	0	Zonal Supply and Extract - SFP = 1.2 W/l/s & FCU SFP = 0.4 W/l/s						Plate	0.8	90	1	90	Yes	90	Yes	-	-	-	-	-	NONE	-	-
0004 Bar	15.402	01 - Dist Htg Clg FCU	03 - Instant Elec DHW	0	Zonal Supply and Extract - SFP = 1.2 W/l/s & FCU SFP = 0.4 W/l/s						Plate	0.8	90	1	90	-		-	-	-	-	-	-	NONE	-	-
B105 WC	20.851	02 - Elec panel remote extract	03 - Instant Elec DHW	0.2	-	-	Yes	10	0.4	Yes	-	-	90	1	90	-		-	-	-	-	-	-	AUTO-ON-OFF	0.1	No
B104 Acc Wc	4.41	02 - Elec panel remote extract	03 - Instant Elec DHW	0.2	-	-	Yes	10	0.4	Yes	-	-	90	1	90	-		-	-	-	-	-	-	AUTO-ON-OFF	0.1	No
B106 Store	11.284	None	03 - Instant Elec DHW	-	-	-	-	-	-	-	-	-	90	1	90	-		-	-	-	-	-	-	AUTO-ON-OFF	0.1	No
0005 Store	6.162	None	03 - Instant Elec DHW	-	-	-	-	-	-	-	-	-	90	1	90	-		-	-	-	-	-	-	AUTO-ON-OFF	0.1	No
B102 Stairs	14.711	None	03 - Instant Elec DHW	-	-	-	-	-	-	-	-	-	90	1	90	-		-	-	-	-	-	-	NONE	-	-
B103 Circulation	14.823	None	03 - Instant Elec DHW	-	-	-	-	-	-	-	-	-	90	1	90	-		-	-	-	-	-	-	NONE	-	-
0002 Stairs	14.711	None	03 - Instant Elec DHW	-	-	-	-	-	-	-	-	-	90	1	90	-		-	-	-	-	-	-	NONE	-	-

Appendix B. District Heating CO_2 & Primary Energy

District Heating CO_2 and Primary Energy

			Notes
CHP heat fraction	**75%**		From Client
CHP heat efficiency (gross)	**50.96%**		Technical submission
CHP electrical efficiency (gross)	**30.30%**		Technical submission
Boiler efficiency (gross)	**95.7%**		Technical submission
Distribution efficiency	**90%**		assumed
Circulation	**0**	kWe/kWh	not used in this scenario was given on a particular project
Boiler fraction	25%		100% minus CHP
Fuel factors (2010)			
Natural gas	**0.198**	kg.CO_2/kWh	2010 Regs
Grid sup electricity	**0.517**	kg.CO_2/kWh	2010 Regs
Grid disp electricity	**0.529**	kg.CO_2/kWh	2010 Regs
Heat to Power	1.68		CHP heat efficiency/CHP elec efficiency
Primary energy factor			
Natural gas	**1.02**	kWh/kWh	SAP: 2012 table 12
Electricity	**2.92**	kWh/kWh	SAP: 2012 table 12
Gas consumed per kWh delivered heat	1.93	kWh	Load-weighted efficiency of heat generation, incl. distribution efficiency
Elec consumed per kWh delivered heat	0.00	kWh	CHP heat fraction divided by dist efficiency (CHP heat demand) divided by heat to power ratio
Elec generated per kWh delivered heat	0.50	kWh	
CO_2 emissions per kWh of delivered heat	**0.119**	kg.CO_2/kWh	

Actual	**Notional**	
Part L: 2013	CO_2Fact	Pfact
Less or equal to 0.15	0.15	0.85
Greater than 0.15, less than 0.40	As Actual	
Greater than 0.40	0.40	1.34

Gas consumed	1.93	kWh	
Gas consumed (primary)	1.96	kWh	Gas consumed multiplied by CO2 factor for gas
Elec consumed	0.00	kWh	
Elec consumed (primary)	0.00	kWh	
Electricity generated	0.50	kWh	
Electricity generated (primary)	1.45	kWh	Electricity generated multiplied by CO2 factor for electricity
Primary Energy Factor	**0.52**	kWh	

Appendix C. BRUKL Output Document

BRUKL Output Document

HM Government

Compliance with England and Wales Building Regulations Part L 2010

Project name **Shell and Core**

Pavilion Retail Unit - AS BUILT

As designed

Date: Fri May 26 16:45:10 2023

Administrative information

Building Details

Address: Pavilion Retail Unit, London, E14 9GU

Certification tool

Calculation engine: Apache

Calculation engine version: 6.4.0.16

Interface to calculation engine: IES Virtual Environment

Interface to calculation engine version: 6.4.0.16

BRUKL compliance check version: v4.1.h.0

Certifier details

Name: Richard de Fleury

Telephone number: 01924 237 500

Address: 6 Silkwood Business Park, Fryer's Way, Wakefield, WF5 9TJ

Criterion 1: The calculated CO_2 emission rate for the building should not exceed the target

1.1	CO_2 emission rate from the notional building, $kgCO_2/m^2.annum$	83
1.2	Target CO_2 emission rate (TER), $kgCO_2/m^2.annum$	83
1.3	Building CO_2 emission rate (BER), $kgCO_2/m^2.annum$	82.3
1.4	Are emissions from the building less than or equal to the target?	BER =< TER
1.5	Are as built details the same as used in the BER calculations?	Separate submission

Criterion 2: The performance of the building fabric and the building services should achieve reasonable overall standards of energy efficiency

2.a Building fabric

Element	$U_{a\text{-}Limit}$	$U_{a\text{-}Calc}$	$U_{i\text{-}Calc}$	Surface where the maximum value occurs*
Wall**	0.35	0.31	0.35	00000002:Surf[8]
Floor	0.25	0.24	0.24	B1000000:Surf[0]
Roof	0.25	0.18	0.18	B1000002:Surf[0]
Windows***, roof windows, and rooflights	2.2	1	1	00000002: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

$U_{a\text{-}Limit}$ = Limiting area-weighted average U-values [$W/(m^2K)$]
$U_{a\text{-}Calc}$ = Calculated area-weighted average U-values [$W/(m^2K)$] $U_{i\text{-}Calc}$ = Calculated maximum individual element U-values [$W/(m^2K)$]

* 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	5.6

2.b Building services

The building services parameters listed below are expected to be checked by the BCO against guidance. No automatic checking is performed by the tool.

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- 02 - Elec panel remote extract

Heating seasonal efficiency	**Cooling nominal efficiency**	**SFP [W/(l/s)]**	**HR seasonal efficiency**
1	-	-	-
Automatic monitoring & targeting with alarms for out-of-range values for this HVAC system			NO

2- 01 - Dist Htg Clg FCU

Heating seasonal efficiency	**Cooling nominal efficiency**	**SFP [W/(l/s)]**	**HR seasonal efficiency**
1	2.91	1.2	0.8
Automatic monitoring & targeting with alarms for out-of-range values for this HVAC system			NO

1- 03 - Instant Elec DHW

Heating seasonal efficiency	**Hot water storage loss factor [kWh/litre per day]**
1	-

Local mechanical ventilation and exhaust

Zone	**Supply/extract SFP [W/(l/s)]**	**HR seasonal efficiency**	**Exhaust SFP [W/(l/s)]**
B105 WC	-	-	0.4
B104 Acc Wc	-	-	0.4

Shell and core configuration

Zone	**Assumed shell?**
B102 Stairs	YES
B106 Store	YES
B105 WC	YES
B104 Acc Wc	YES
B107 Staff Welfare	YES
B103 Circulation	YES
0003 Cafe / Bar	YES
0002 Stairs	YES
0005 Store	YES
0004 Bar	YES

General lighting and display lighting

Zone	**General lighting [W]**	**Display lamps efficacy [lm/W]**
B102 Stairs	30	-
B106 Store	10	-
B105 WC	70	-
B104 Acc Wc	20	-
B107 Staff Welfare	90	-
B103 Circulation	30	-
0003 Cafe / Bar	480	90
0002 Stairs	30	-
0005 Store	10	-
0004 Bar	110	-

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?
B107 Staff Welfare	N/A	N/A
0003 Cafe / Bar	YES (+16.4%)	NO
0004 Bar	NO (-13%)	NO

Criterion 4: The performance of the building, as built, should be consistent with the 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]	342	342
External area [m^2]	1505.2	1044.6
Weather	LON	LON
Infiltration [m^3/hm^2@ 50Pa]	6	5
Average conductance [W/K]	490.7	364.45
Average U-value [W/m^2K]	0.33	0.35
Alpha value* [%]	12.37	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
100	**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 Inst.: Hospitals and Care Homes
	C2 Residential Inst.: Residential schools
	C2 Residential Inst.: Universities and colleges
	C2A Secure Residential Inst.
	Residential spaces
	D1 Non-residential Inst.: Community/Day Centre
	D1 Non-residential Inst.: Libraries, Museums, and Galleries
	D1 Non-residential Inst.: Education
	D1 Non-residential Inst.: Primary Health Care Building
	D1 Non-residential Inst.: 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^2]

	Actual	Notional
Heating	20.84	41.42
Cooling	11.45	9.91
Auxiliary	39.63	41.16
Lighting	18.82	48
Hot water	80.35	91.3
Equipment*	93.31	93.31
TOTAL**	**171.09**	**231.8**

* Energy used by equipment does not count towards the total for calculating emissions.
** Total is net of any electrical energy displaced by CHP generators, if applicable.

Energy Production by Technology [kWh/m^2]

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

Energy & CO_2 Emissions Summary

	Actual	Indicative Target
Heating + cooling demand [MJ/m^2]	196.31	237.57
Primary energy* [kWh/m^2]	462.51	410.65
Total emissions [kg/m^2]	82.3	83

* 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 SSEEF	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	210.4	0	73	0	23.5	0.8	0	1	0
	Notional	228	0	76	0	33.5	0.83	0	----	----
[ST] Fan coil systems, [HS] District heating, [HFT] District Heating, [CFT] Electricity										
	Actual	74.6	167.8	20.7	15.3	50.8	1	3.04	1	3.94
	Notional	114.6	181.3	48	13.3	51.9	0.66	3.79	----	----
[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 BCO can give particular attention to items with specifications that are better than typically expected.

Building fabric

Element	$U_{i\text{-}Typ}$	$U_{i\text{-}Min}$	Surface where the minimum value occurs*
Wall	0.23	0.19	00000002:Surf[7]
Floor	0.2	0.24	00000002:Surf[75]
Roof	0.15	0.18	00000007:Surf[0]
Windows, roof windows, and rooflights	1.5	1	00000002:Surf[10]
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

$U_{i\text{-}Typ}$ = Typical individual element U-values [W/(m²K)] $U_{i\text{-}Min}$ = 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	5.6

Appendix D. Preliminary EPC based on Shell and Core assumptions

The following EPC is based upon information outlined within this report.

Energy Performance Certificate

Non-Domestic Building

HM Government

Pavilion Retail Unit
14 Marsh Wall
London
E14 9GU

Certificate Reference Number:
7675-7334-7563-5669-9684

This certificate shows the energy rating of this building. It indicates the energy efficiency of the building fabric and the heating, ventilation, cooling and lighting systems. The rating is compared to two benchmarks for this type of building: one appropriate for new buildings and one appropriate for existing buildings. There is more advice on how to interpret this information in the guidance document *Energy Performance Certificates for the construction, sale and let of non-dwellings* available on the Government's website at www.gov.uk/government/collections/energy-performance-certificates.

Energy Performance Asset Rating

More energy efficient

A+

Net zero CO_2 emissions

A 0-25

B 26-50

C 51-75

D 76-100

E 101-125

F 126-150

G Over 150

44 This is how energy efficient the building is.

Less energy efficient

Technical information

Main heating fuel:	Grid Supplied Electricity
Building environment:	Air Conditioning
Total useful floor area (m^2):	342.036
Building complexity:	Level 5
Building emission rate ($kgCO_2/m^2$ per year):	85.06
Primary energy use (kWh/m^2 per year):	497.04

Benchmarks

Buildings similar to this one could have ratings as follows:

40 If newly built

117 If typical of the existing stock

Administrative information

This is an Energy Performance Certificate as defined in the Energy Performance of Buildings Regulations 2012 as amended.

Assessment Software:	Virtual Environment v7.0.20 using calculation engine ApacheSim v7.0.20
Property Reference:	
Assessor Name:	Richard de Fleury
Assessor Number:	STRO006005
Accreditation Scheme:	Stroma Certification Ltd
Assessor Qualifications:	NOS5
Employer/Trading Name:	Stroma Built Environment Limited
Employer/Trading Address:	6 Silkwood Business Park, Fryer's Way, Wakefield, WF5 9TJ
Issue Date:	26 May 2023
Valid Until:	25 May 2033 (unless superseded by a later certificate)
Related Party Disclosure:	Not related to the owner

Recommendations for improving the energy performance of the building are contained in the associated Recommendation Report: 5826-5527-0836-6261-0996

About this document and the data in it

This document has been produced following an energy assessment undertaken by a qualified Energy Assessor, accredited by Stroma Certification Ltd. You can obtain contact details of the Accreditation Scheme at www.stroma.com.

A copy of this certificate has been lodged on a national register as a requirement under the Energy Performance of Buildings Regulations 2012 as amended. It will be made available via the online search function at www.ndepcregister.com. The certificate (including the building address) and other data about the building collected during the energy assessment but not shown on the certificate, for instance heating system data, will be made publicly available at www.opendatacommunities.org.

This certificate and other data about the building may be shared with other bodies (including government departments and enforcement agencies) for research, statistical and enforcement purposes. For further information about how data about the property are used, please visit www.ndepcregister.com. To opt out of having information about your building made publicly available, please visit www.ndepcregister.com/optout.

There is more information in the guidance document *Energy Performance Certificates for the construction, sale and let of non-dwellings* available on the Government website at: www.gov.uk/government/collections/energy-performance-certificates. It explains the content and use of this document and advises on how to identify the authenticity of a certificate and how to make a complaint.

Opportunity to benefit from a Green Deal on this property

The Green Deal can help you cut your energy bills by making energy efficiency improvements at no upfront costs. Use the Green Deal to find trusted advisors who will come to your property, recommend measures that are right for you and help you access a range of accredited installers. Responsibility for repayments stays with the property - whoever pays the energy bills benefits so they are responsible for the payments.

To find out how you could use Green Deal finance to improve your property please call 0300 123 1234.

Appendix E. Lodged Shell and Core EPC

The following EPC is based upon information outlined within this report and where required under the EPC conventions .

Energy performance certificate (EPC)

Pavilion Retail Unit 14 Marsh Wall London E14 9GU	Energy rating **C**	Valid until: **25 May 2033** Certificate number: **3632-3247-7892-2542-4725**

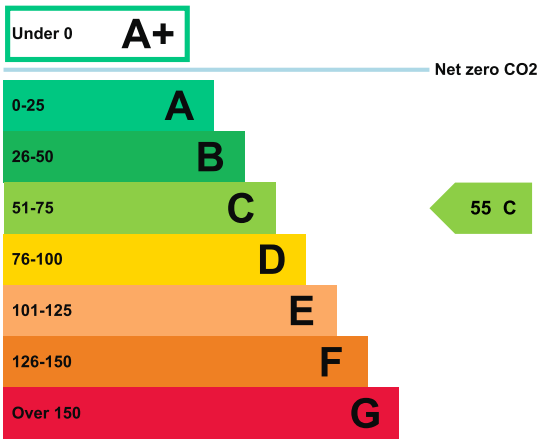
Property type	A3/A4/A5 Restaurant and Cafes/Drinking Establishments and Hot Food takeaways
Total floor area	342 square metres

Rules on letting this property

Properties can be let if they have an energy rating from A+ to E.

Energy efficiency rating for this property

This property's current energy rating is C.



Properties are given a rating from A+ (most efficient) to G (least efficient).

Properties are also given a score. The larger the number, the more carbon dioxide (CO2) your property is likely to emit.

How this property compares to others

Properties similar to this one could have ratings:

If newly built	40 B
If typical of the existing stock	117 E

Breakdown of this property's energy performance

Main heating fuel	Grid Supplied Electricity
Building environment	Air Conditioning
Assessment level	5
Building emission rate (kgCO2/m2 per year)	105.63
Primary energy use (kWh/m2 per year)	616

Recommendation report

Guidance on improving the energy performance of this property can be found in the recommendation report (/energy-certificate/4899-3277-2662-9585-0776).

Who to contact about this certificate

Contacting the assessor

If you're unhappy about your property's energy assessment or certificate, you can complain to the assessor who created it.

Assessor's name	Richard de Fleury
Telephone	0845 621 1111
Email	richard.defleury@stroma.com

Contacting the accreditation scheme

If you're still unhappy after contacting the assessor, you should contact the assessor's accreditation scheme.

Accreditation scheme	Stroma Certification Ltd
Assessor's ID	STRO006005
Telephone	0330 124 9660
Email	certification@stroma.com

About this assessment

Employer	Stroma Built Environment Limited
Employer address	6 Silkwood Business Park, Fryer's Way, Wakefield, WF5 9TJ
Assessor's declaration	The assessor is not related to the owner of the property.
Date of assessment	26 May 2023
Date of certificate	26 May 2023