ELMSTEAD ENERGY ASSESSMENTS AND BUILDING SERVICES

167-177 Shaftesbury Avenue
London WC2H 8AN

Energy Statement

Elmstead Energy Assessments & Building Services
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Document Issue Record

This document has been revised and issued as below:

Issue	Date	Comments
1	21.01.2025	Original

Disclaimer

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Figures

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1.0 Executive Summary

EEABS (Elmstead Energy Assessments & Building Services) were instructed to produce an Energy Statement for the proposed basement refurbishment of 167-177 Shaftesbury Avenue, London WC2H 8AN.

This Energy statement can be used as a supporting document to the planning application to demonstrate that the overall energy strategy of the proposed development will meet the requirements set out by Building Regulations, The London Plan, and local Camden Planning Policy.

Proposed Design Results

The results below show total carbon emissions in kgCO2/m2 for the proposed design following the energy hierarchy in comparison to the London Plan Notional baseline.

Table 1 - Summary Carbon Emission Results

	Baseline Target CO2 Emissions (kgCO2/m2)	Proposed Design CO2 Emissions (kgCO2/m2)	Total CO2 Savings (%)
Refurbished Shop	7.97	4.71	41

The results show that the total Be Lean Stage CO2 emissions are estimated to be 4.71 kgCO2/m^2 which equates to 2.46 Tonnes of CO2 per annum, compared to 7.97 kgCO2/m^2 equating to 4.17 Tonnes of CO2 for the baseline, an overall improvement of 41%. The London Borough of Camden and Lonon Plan Energy requirements would therefore be satisfied.

The proposed refurbished shop would also receive a very good EPC rating of A-19.

As the shop's mechanical services, such as heating and hot water, would be provided by electricity only there would also be zero Particulate Matter (PM) emissions and zero Nitrogen Oxide (NOx) emissions on site.

Conclusion

This energy statement has shown that the proposed basement refurbishment of 167-177 Shaftesbury Avenue, London WC2H 8AN would satisfy the energy requirements of Part L Building Regulations, Camden Local Planning Policies, and the London Plan.

2.0 Introduction

EEABS (Elmstead Energy Assessments & Building Services) were instructed to produce an Energy Statement for the proposed basement refurbishment of 167-177 Shaftesbury Avenue, London WC2H 8AN.

This Energy statement can be used as a supporting document to the planning application to demonstrate that the overall energy strategy of the proposed development will meet the requirements set out by Building Regulations, The London Plan, and local Camden Planning Policy.

2.1 Site Location

The site is located at 167-177 Shaftesbury Avenue, London WC2H 8AN and the proposed works will consist of a refurbishment to the existing unused basement space to make it an additional part of the ground floor retail unit. The Proposed Use will be categorised as 'E(a) - Display/Sale of goods other than hot food'.

Please see the architects' submitted drawings for full details of the proposed development.

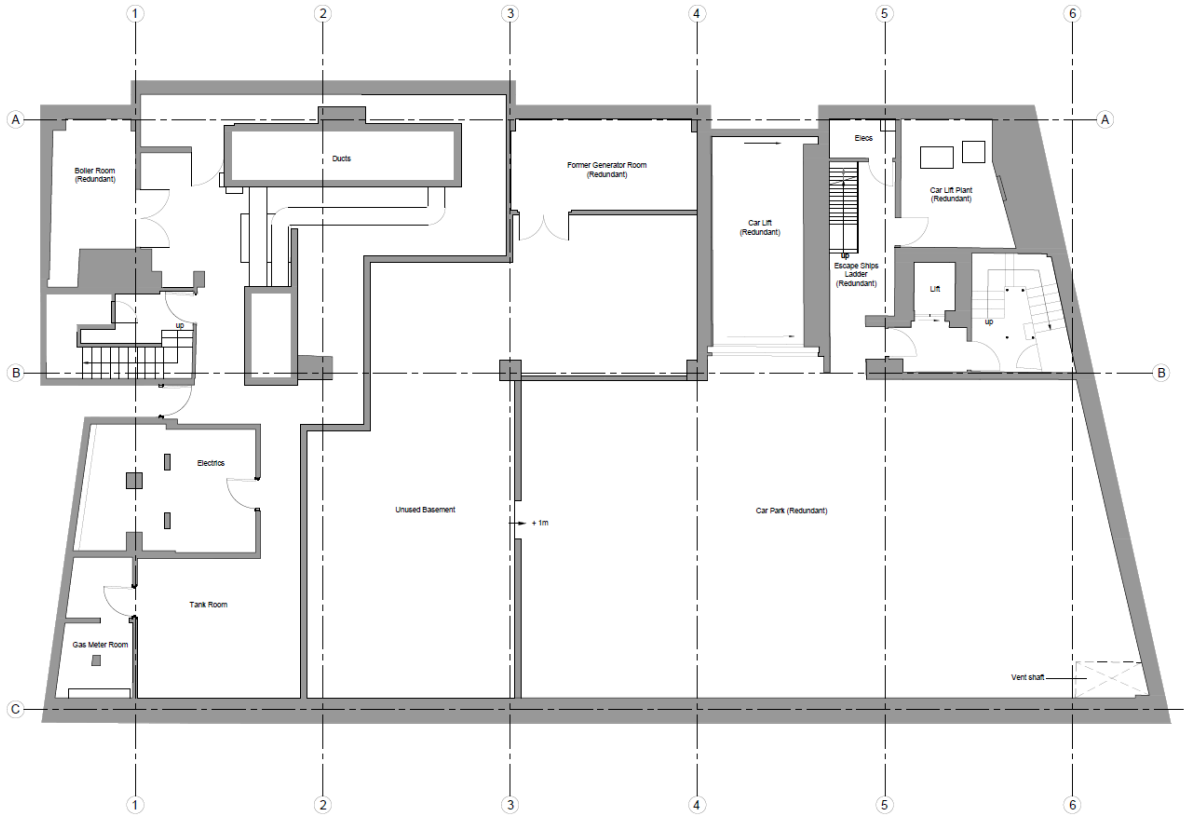

Figure 1 - Existing Basement Floor Plan

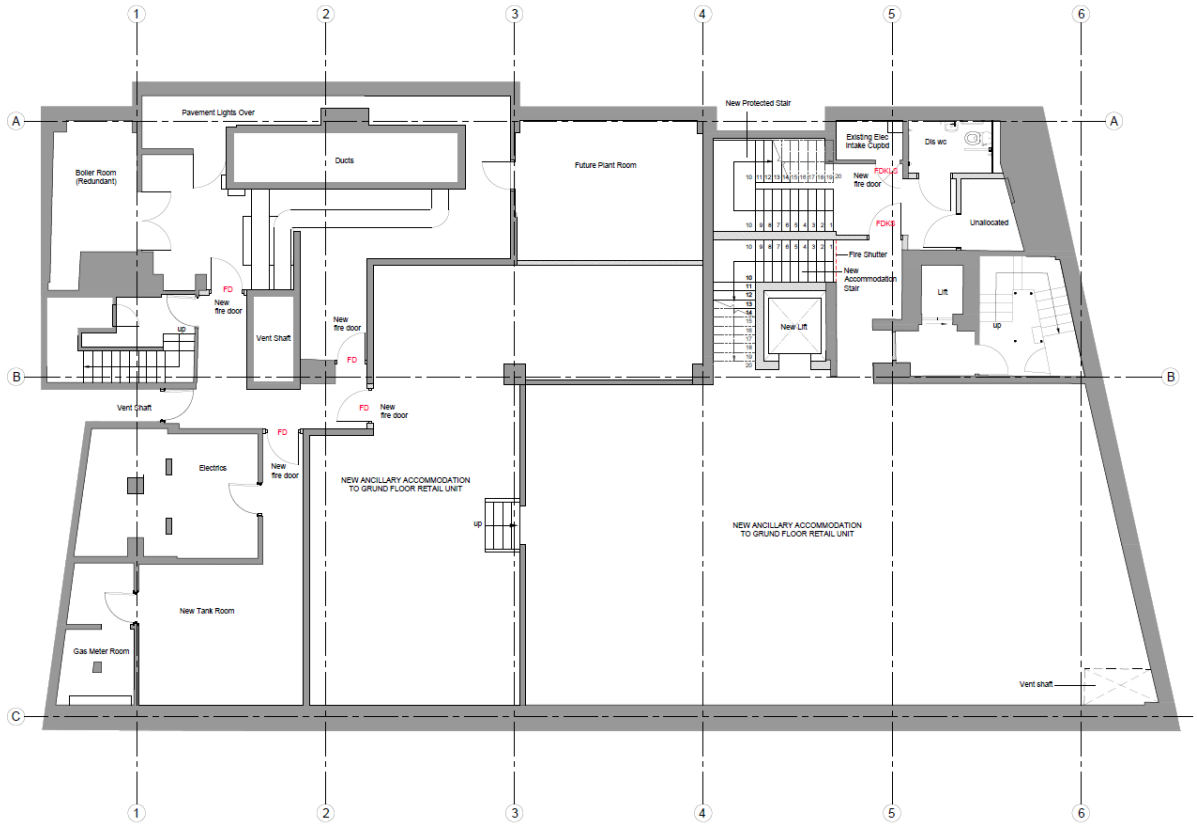

Figure 2 - Proposed Basement Floor Plan

2.2 Planning Policy Context

Numerous policies that relate to the energy efficiency, carbon emissions, and overall sustainability of the development have been considered in preparation of this energy assessment.

2.2.1 National Planning Policy Framework

The National Planning Policy Framework encourages local planning authorities to adopt proactive strategies to mitigate and adapt to climate change.

They should plan for new development in ways which reduce greenhouse gas emissions; actively support energy efficiency improvements to existing buildings; and set local sustainability requirements which are consistent with the government's policies and standards.

2.2.2 Building Regulations Part L 2021

The assessment of the development against policy targets has been carried out using the very latest Part L 2021 benchmarks. The Part L 2021 targets represent approximately a 30% reduction in carbon emissions in comparison to the Part L 2013 target.

Part L 2021 requires that any non-domestic building does not exceed the CO2 emission and Primary Energy Rate of that set by a Target Emission Rate (TER) and Target Primary Energy Rate (TPER) to the approved 2021 National Calculation Methodology (NCM).

2.2.3 London Borough of Camden

The London Borough of Camden Local Plan 2017 Policy CC1 Climate Change Mitigation states that the Council will require all development to minimise the effects of climate change and encourage all developments to meet the highest feasible environmental standards that are financially viable during construction and occupation.

The Council will:

- Promote zero carbon development and require all development to reduce carbon emissions through following the steps in the energy hierarchy.
- Support and encourage sensitive energy efficiency improvements to existing buildings.

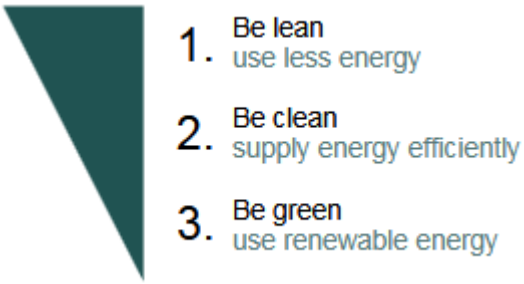

Figure 3 - Camden Energy Hierarchy

2.2.4 The London Plan

The latest London Plan guidance on the preparation of Energy Assessments is from June 2022 and has been used to structure this energy statement. The guidance will be followed, and every effort will be made to ensure the most energy efficient and carbon minimal design possible. Policy SI 2 of the London Plan requires proposals to make the fullest contribution to minimising carbon dioxide emissions through on-site methods in accordance with the energy hierarchy:

3.0 Assessment Methodology

To calculate the estimated carbon emission of the development EDSL TAS Dynamic Simulation Modelling software has been used. The EDSL TAS software has been approved by the Department for Communities and Local Government (DCLG) for use as a Dynamic Simulation Model (DSM) software package.

As part of its approval process, the TAS software had to demonstrate that it satisfies all of the tests and other requirements defined within sections 2 and 3 of the document "CIBSE TM33:2006, CIBSE standard tests for the assessment of building services design software". The thermal modelling has also been carried out in accordance with CIBSE AM11 Building Energy and Environmental Modelling.

3.1 EDSL TAS Model

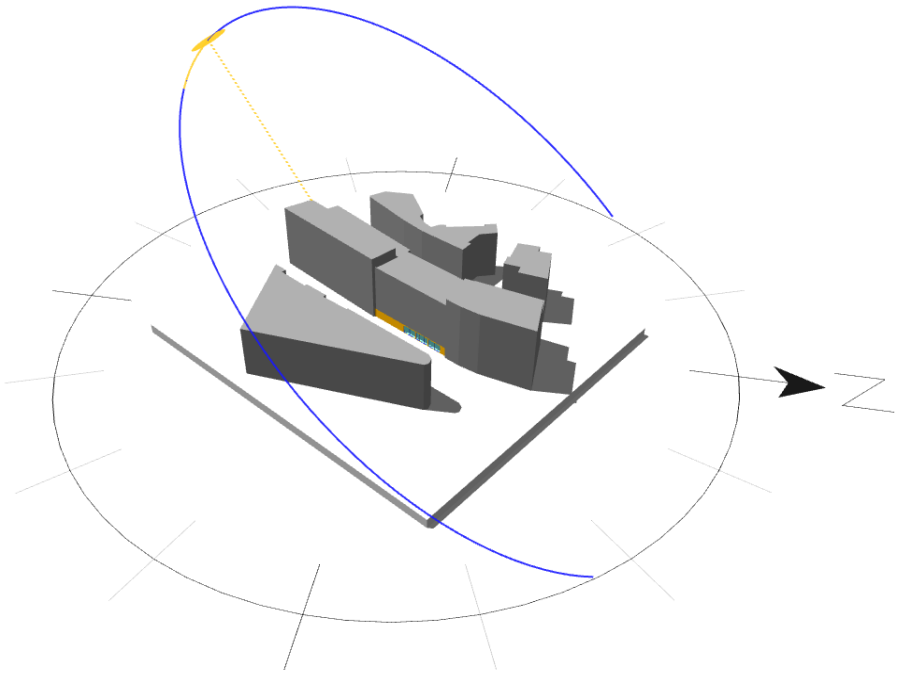

Figure 4 - EDSL TAS Model of the Proposed Development

As this project is a conversion it does not need to meet a strict carbon emission target under Part L. Therefore, in order to show compliance with Part L the proposed thermal element U-Values, and any fixed Building services will have their efficiencies compared to the Part L minimum standards.

The Part L Approved Document section 11 states that this would be classified as a material change of use, as the basement would now be used as a shop were previously it was not. It should therefore follow the guidance within section 11.7 to show compliance with Part L. Provided the proposed design is better than the Part L minimum standards it would comply with the Building Regulations.

11.5 A material change of use, in relation to buildings other than dwellings, is when a building satisfies any of the following:

g. is used as a shop where previously it was not.

Figure 5 - Part L Requirements for a Material Change of Use

To produce a baseline that the proposed design of the shop can be compared against we have used the London Plan Notional Specification for existing buildings.

Table 11: *Non-residential notional specification for existing buildings*

Element	Unit	Specification[1]
External Wall (cavity insulation)	W/m²K	0.55
External Wall (external or internal insulation)	W/m²K	0.30
Roof (flat roof)	W/m²K	0.18
Roof (pitched roof)	W/m²K	0.16
Floor	W/m²K	0.25
Glazing	W/m²K	1.40
Vision element	g-value	0.40
Air permeability	(m^3/h m^2 @ 50 Pa)	1. Less than 10 – only with an accredited air pressure test result 2. 10 – buildings > 500 m^2 built to 2002 Building Regulations (or later) 3. 15 – buildings <= 500 m^2 built to 2002 Building Regulations (or later) 4. 15 – Buildings built to 1995 Building Regulations 5. 25 – buildings built to Building Regulations pre 1995
Thermal Bridging	W/m²K	Default
HVAC System	Type	As per final building specification
Heating and Hot Water	Per cent	Efficiencies to match the applicable notional values for existing buildings (see tables 6.2, 6.4, 6.5 & 6.8 in Approved Document L2)
Cooling (air-condition)[2]	SEER	6. As per final building specification. Seasonal energy efficiency ratio
		(SEER) to match the applicable notional values for existing buildings (see table 6.9 in Approved Document L2)
Central ventilation SFP	W/l/s	Specific fan power to match the applicable notional values for existing buildings (see table 6.9 in Approved Document L2)
Terminal Unit SFP	W/l/s	Specific fan power to match the applicable notional values for existing buildings (see table 6.9 in Approved Document L2)
Heat Recovery	Per cent	70 per cent
Lighting	Lm/Watt	60

Figure 6 - London Plan Non-Residential Notional Specification for Existing Buildings

3.2 Limitations

The appraisals within this strategy are based on the Building Regulations Part L (2021) calculation methodology and should not be understood as a predictive assessment of likely future energy requirements or otherwise.

Occupants may operate their systems differently, and/or the weather may be different from the assumptions made by Part L approved calculation methods, leading to differing energy requirements once the development is in operation.

4.0 Energy Assessment

The following sections describe how the notional baseline and proposed developments Carbon Emissions have been calculated for the development.

4.1 Baseline Target

The baseline target emission rate is taken from Table 11 within Appendix 3 of the London Plan Energy Guidance which provide a baseline non-residential notional specification to use for existing buildings.

Table 2 - Baseline Carbon Emission Results

Unit	Area (m2)	CO2 Emission Rate (kgCO2/m2)	Total CO2 Emissions (Tonnes of CO2)
Baseline - Shop	522.96	7.97	4.17

The results show that the total baseline CO2 emissions is estimated to be 4.17 Tonnes of CO2 per annum.

4.2 Proposed Development - Following the Energy Hierarchy

4.2.1 Be Lean

Where possible the development has taken a fabric first approach to reducing the initial energy demand by the following methods:

Thermal Envelope

The inclusion of high levels of thermal insulation not only helps to reduce the buildings overall energy demand and therefore carbon emissions, but it also plays a vital role in securing the occupant's thermal comfort.

With regards to thermal elements Part L provides the following guidance.

11.7 If there is a material change of use and/or a change to energy status, elements should satisfy all of the following.

a. Existing thermal elements should meet the standards as outlined in paragraphs 4.7 to 4.8.

Table 4.2 Limiting U-values for existing elements in existing buildings

Element	U-value[1] W/(m²·K)	
	(a) Threshold	(b) Improved
Pitched roof – insulation at ceiling level[2]	0.35	0.16
Pitched roof – insulation at rafter level[2][3]	0.35	0.18
Flat roof or roof with integral insulation[2][4]	0.35	0.18
Wall – cavity insulation[2][5]	0.70	0.55
Wall – external or internal insulation[2][6]	0.70	0.30
Floors[7][8]	0.70	0.25

Figure 7 - Part L Guidance for Existing Thermal Elements

Any existing walls, floors, and roofs will therefore aim to achieve the improved U-Values shown above. Although Part L does state that this needs to be technically, functionally, and economically feasible. Where this is not the case the U-Values should at least achieve a value of 0.70 W/m2.K. Any new thermal elements will meet the requirements within Part L Table 4.1 (shown on next page).

Glazing Performance

We have assumed that all windows would be display windows which have no maximum value under Part L. Therefore, we have assumed that the same U-Value would be used for both the Baseline Notional Building and the actual Proposed Building.

Any new windows, that are not display glazing, and any new entrance doors, as well as any new building element such as an infill wall will meet or exceed the limiting U-Values for new elements within existing buildings, shown in Table 4.1.

Table 4.1 Limiting U-values for new or replacement elements in new and existing buildings and air permeability in new buildings

Element type	Maximum U-value[1] W/(m²·K) or air permeability
Roof (flat roof)[2]	0.18
Roof (pitched roof)[2]	0.16
Wall[2][3]	0.26
Floor[4][5]	0.18
Swimming pool basin[6]	0.25
Windows in buildings similar to dwellings[7][8]	1.6 or Window Energy Rating[9] Band B
All other windows,[8][10][11] roof windows, curtain walling	1.6
Rooflights[12][13]	2.2
Pedestrian doors (including glazed doors)[14]	1.6
Vehicle access and similar large doors	1.3
High-usage entrance doors	3.0
Roof ventilators (including smoke vents)	3.0
Air permeability (for new buildings)	8.0m³/(h·m²) @ 50Pa

Figure 8 - Part L Guidance for New Fabric Elements in New and Existing Buildings

Air Permeability

The Shop will be air tested when complete to target an air permeability rating of around 15 m3/(h.m2)@50Pa, this is better than the London Plan Notional value which is 25 m3/(h.m2)@50Pa for buildings built pre-1995. The guidance for achieving good air tightness in existing buildings will also be followed.

Airtightness in existing buildings

4.15 When carrying out work in existing buildings, care should be taken to reduce unwanted heat loss through air infiltration by doing all of the following.

a. When installing pipework or services, taping and sealing around openings and service penetrations.

b. When installing or renovating thermal elements, the element being installed should be draught-proofed and air-leakage gaps should be filled.

c. When installing controlled fittings, the controlled fitting should be well fitted and reasonably draught-proof.

Figure 9 - Part L Guidance to Achieve Good Air Tightness

Summary of Thermal Elements

In summary the proposed thermal elements (walls, roof, floor, windows etc.), whether existing or new, and air tightness of the development will satisfy the Part L limiting fabric requirements.

A table showing a summary of the proposed thermal elements can be seen below:

Table 3 - Summary Table of Passive Design Measures for Domestic Areas

Parameter	Baseline Values	Development Proposal
Floor	0.25 W/m^2.K	0.25 W/m^2.K
Walls	0.30 W/m^2.K	0.30 W/m^2.K
Roofs	N/A	N/A
Glazing	N/A	N/A
Air Permeability	25 m^3/h.m^2	15 m^3/h.m^2

The summary shows that the proposed development will be an improvement over the baseline Notional fabric parameters.

Fixed Building Services

The following fixed building services and their efficiencies are assumed for the conversion.

Heating and Hot Water

Heating and hot water within the shop will be provided by direct electric systems. The electric systems will have suitable time and temperature controls to allow them to be controlled efficiently.

Part L considers electric heating to be 100% efficient, so there is no minimum standard to be met.

Electric space heating systems

NOTE: Electric resistance heating is assumed to be 100% efficient, therefore no minimum efficiency is set for these types of system.

Figure 10 - Part L Minimum Requirement for Electric Heating Systems

Lighting

The lighting for the development will consist of low energy LED lighting throughout and will be at least 120 lumens/watt, better than the minimum required Part L target of 95 lumens/watt and the London Plan Notional Building which is set at 60 lumens/watt.

6.60 Lighting should observe the following.

a. If it is general lighting, either:

i. have an average luminaire efficacy of 95 luminaire lumens per circuit-watt

Figure 11 - Part L Minimum Requirement for Lighting

Ventilation

The ventilation to the refurbishment basement shop area is assumed to be supplied by a mechanical ventilation system with a specific fan power of 1.2 W/l/s and a heat recovery efficiency of 85%. This is better than the Notional baseline system values of 2.3 W/l/s and a heat recovery efficiency of only 70%.

Table 6.9 Maximum specific fan power (SFP) in air distribution systems in new and existing buildings

System type[1]	SFP (W/(l·s))[2][3]	
	New buildings	Existing buildings
Zonal balanced supply and extract ventilation units, such as ceiling void or roof units	2.3	2.3

Figure 12 - Part L Minimum Requirements for Ventilation

Summary of Fixed Building Services

In summary the proposed refurbishments fixed building services will satisfy the Part L requirements.

Table 4 - Be Lean Stage Carbon Emission Results

Unit	Area (m2)	CO2 Emission Rate (kgCO2/m2)	Total CO2 Emissions (Tonnes of CO2)
Be Lean Stage - Shop	522.96	4.71	2.46

The results show that the total Be Lean Stage CO2 emissions are estimated to be 2.46 Tonnes of CO2 per annum, compared to 4.17 for the baseline, an improvement of 41%.

4.2.2 Be Clean

The Be Clean Stage of the Energy Hierarchy focuses on heating infrastructure and proposes creating or connecting to an already existing District Heating Network.

The London Plan Heat Map shows that the nearest existing heat network is around 1km away, with a proposed future heat network around 500m away. For these reasons, and because the heating requirement of the proposed refurbished shop will be minimal, it would be unfeasible to connect to a heat network.

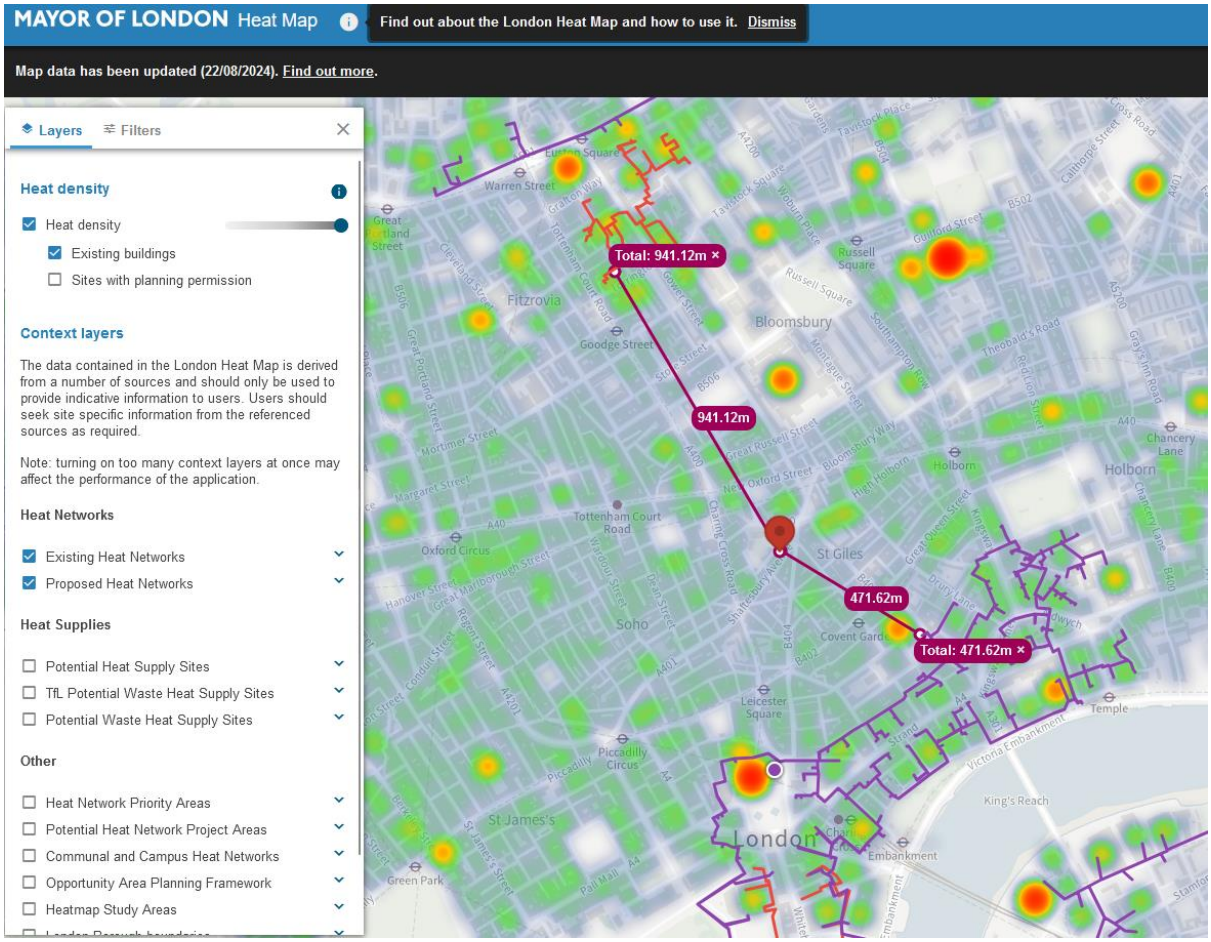

Figure 13 - London Plan Heat Map Showing District Heating Networks

4.2.3 Be Green

The Be Green stage of the energy hierarchy focuses on on-site low and zero carbon renewable technologies.

The table below provides a brief analysis of the different renewables considered for the site and comments on their overall feasibility.

Table 5 - Low Carbon and Renewable Technologies Analysis

Low Carbon or Renewable Technology	Comments	Feasible
Air Source Heat Pumps	ASHPs can be used to provide both heating and hot water. With a high Seasonal Coefficient of Performance (SCOP) the benefit of a providing heating from an ASHP could outweigh the use of a gas boiler. An external condenser would be required which would spoil the local amenity of the area.	No
Ground Source Heat Pumps	Ground Source Heat Pumps are usually more efficient than ASHP as the temperature of the ground is more stable throughout the year. However, the installation of Ground Source is complex and would not be economically or practically feasible for this project.	No
Photovoltaic Solar Panels	PV panels could be installed on suitable areas of roof. PV panels are a simple to install technology that can produce green electricity with very little ongoing maintenance. As the shop is only located across the ground and basement floors this would not be feasible.	No
Solar Hot Water Panels	Solar Hot Water Panels would also need to be installed on the roof of the development and would help to supplement the hot water requirements. As with PV, these would not be feasible.	No
Biomass Boiler	A biomass boiler uses wood chips/pellets and would need a constant supply. A large storage area would be required to store the fuel on the site. There are also concerns with local air quality.	No
Wind Turbines	Large wind turbines would be required to produce any significant electrical savings. As the development is within a built-up location the installation of any such turbine would be unfeasible.	No

From brief assessment of the various renewable technologies available we can see that no renewable technology would be feasible to install for the proposed development.

4.2.4 Proposed Design Results

The results below show total carbon emissions in kgCO2/m2 for the proposed design following the energy hierarchy as previously described in comparison to the Notional baseline.

Table 6 - Summary Carbon Emission Results

	Baseline Target CO2 Emissions (kgCO2/m2)	Proposed Design CO2 Emissions (kgCO2/m2)	Total CO2 Savings (%)
Refurbished Shop	7.97	4.71	41

The results show that the total Be Lean Stage CO2 emissions are estimated to be 4.71 kgCO2/m^2 which equates to 2.46 Tonnes of CO2 per annum, compared to 7.97 kgCO2/m^2 equating to 4.17 Tonnes of CO2 for the baseline, an overall improvement of 41%. The London Borough of Camden and Lonon Plan Energy requirements would therefore be satisfied.

The proposed refurbished shop would also receive a very good EPC rating of A-19.

As the shop's mechanical services, such as heating and hot water, would be provided by electricity only there would also be zero Particulate Matter (PM) emissions and zero Nitrogen Oxide (NOx) emissions on site.

Appendix A - Part L 2021 BRUKL Document and Draft EPC - London Plan Notional Baseline

BRUKL Output Document

HM Government

Compliance with England Building Regulations Part L 2021

Project name **Shell and Core**

Baseline

As designed

Date: Tue Jan 21 16:03:13 2025

Administrative information

Building Details

Address: 30 New Compton Street, 167-177 Shaftesbury Avenue, London, WC2H 8AN

Certifier details

Name: Jason Welsh

Telephone number: 01206 489019

Address: EEABS, Suite 3, Aster House, Lanswood Park, Elmstead Market, Colchester, CO7 7FD

Certification tool

Calculation engine: TAS

Calculation engine version: "v9.5.6"

Interface to calculation engine: TAS

Interface to calculation engine version: v9.5.6

BRUKL compliance module version: v6.1.e.0

Foundation area [m^2]: 137.76

The CO_2 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	1.56	
Building CO_2 emission rate (BER), $kgCO_2/m^2$.annum	7.97	
Target primary energy rate (TPER), kWh_{PE}/m^2.annum	16.27	
Building primary energy rate (BPER), kWh_{PE}/m^2.annum	84.58	
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	$U_{a\text{-}Limit}$	$U_{a\text{-}Calc}$	$U_{i\text{-}Calc}$	First surface with maximum value
Walls*	0.26	0.28	0.3	External Wall
Floors	0.18	0.25	0.25	Ground Floor
Pitched roofs	0.16	-	-	No pitched roofs in project
Flat roofs	0.18	-	-	No flat roofs in project
Windows** and roof windows	1.6	-	-	No windows or roof windows in project
Rooflights***	2.2	-	-	No rooflights in project
Personnel doors^	1.6	1.59	1.59	New Ext Door 1
Vehicle access & similar large doors	1.3	-	-	No vehicle access or similar large doors in project
High usage entrance doors	3	2.2	2.2	Ex Ent Door

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

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

* 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/m^2K

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- Extract (3 Zones)

	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- MVHR (B - Retail)

	Heating efficiency	**Cooling efficiency**	**Radiant efficiency**	**SFP [W/(l/s)]**	**HR efficiency**
This system	1	-	-	-	0.7
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

1- Elec HW

	Water heating efficiency	**Storage loss factor [kWh/litre per day]**
This building	1	0
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	**SFP [W/(l/s)]**									**HR efficiency**	
ID of system type	**A**	**B**	**C**	**D**	**E**	**F**	**G**	**H**	**I**		
Standard value	0.3	1.1	0.5	2.3	2	0.5	0.5	0.4	1	**Zone**	**Standard**
GF - Staff Area	0.3	-	-	-	-	-	-	-	-	-	N/A
GF - Toilets	0.3	-	-	-	-	-	-	-	-	-	N/A
B - Retail	-	-	-	2.3	-	-	-	-	-	-	N/A
B - Toilet	0.3	-	-	-	-	-	-	-	-	-	N/A

Shell and core configuration

Zone	**Assumed shell?**
GF - Staff Area	NO
GF - Toilets	NO
B - Retail	YES
B - Toilet	NO

General lighting and display lighting	General luminaire	Display light source	
Zone name	**Efficacy [lm/W]**	**Efficacy [lm/W]**	**Power density [W/m²]**
Standard value	95	80	0.3
GF - Retail	60	95	-
GF - Staff Area	60	-	-
GF - Toilets	60	-	-
B - Retail	60	95	-
B - Store	60	-	-
B - Toilet	60	-	-
Stair 1	60	-	-

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?
GF - Retail	YES (+111%)	NO
GF - Staff Area	N/A	N/A
B - Retail	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]	523	523
External area [m^2]	382	382
Weather	LON	LON
Infiltration [m^3/hm^2@ 50Pa]	25	3
Average conductance [W/K]	184	100
Average U-value [W/m^2K]	0.48	0.26
Alpha value* [%]	23.44	8.44

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

Building Use

% Area	Building Type
100	**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
	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/m^2]

	Actual	Notional
Heating	18.37	0.29
Cooling	0	0
Auxiliary	5.31	2.54
Lighting	29.85	15.39
Hot water	1.58	1.5
Equipment*	19.7	19.7
TOTAL**	**55.11**	**19.71**

* 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^2]

	Actual	Notional
Photovoltaic systems	0	8.74
Wind turbines	0	0
CHP generators	0	0
Solar thermal systems	0	0
Displaced electricity	*0*	*8.74*

Energy & CO_2 Emissions Summary

	Actual	Notional
Heating + cooling demand [MJ/m^2]	66.13	1.48
Primary energy [kWh_{PE}/m^2]	84.58	16.27
Total emissions [kg/m^2]	7.97	1.56

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] Unflued radiant heater, [HS] Direct or storage electric heater, [HFT] Electricity, [CFT] Electricity										
	Actual	293.7	0	81.6	0	0	1	0	1	0
	Notional	38.4	0	8	0	0	1.34	0	----	----
[ST] Unflued radiant heater, [HS] Direct or storage electric heater, [HFT] Electricity, [CFT] Electricity										
	Actual	113.6	0	31.5	0	10.8	1	0	1	0
	Notional	0.2	0	0.1	0	5.4	1.34	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

Energy Performance Certificate

Non-Domestic Building

HM Government

30 New Compton Street
167-177 Shaftesbury Avenue
London
WC2H 8AN

Certificate Reference Number:
4475-1239-6246-6463-1733

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

33 This is how energy efficient the building is.

Less energy efficient

Technical information

Main heating fuel:	Grid Supplied Electricity
Building environment:	Heating and Natural Ventilation
Total useful floor area (m^2):	523
Building complexity:	Level 5
Building emission rate ($kgCO_2/m^2$ per year):	7.97
Primary energy use (kWh_{PE}/m^2 per year):	84.58

Benchmarks

Buildings similar to this one could have ratings as follows:

6 If newly built

26 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:	TAS v9.5.6 using calculation engine TAS v9.5.6
Property Reference:	
Assessor Name:	Jason Welsh
Assessor Number:	LCEA122167
Accreditation Scheme:	CIBSE Certification Limited
Assessor Qualifications:	NOS5
Employer/Trading Name:	Elmstead Energy Assessors & Building Services
Employer/Trading Address:	Suite 3, Aster House, Lanswood Park, Elmstead Market, Colchester, CO7 7FD
Issue Date:	21 Jan 2025
Valid Until:	20 Jan 2035 (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: 0644-9365-5624-0532-9335

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 CIBSE Certification Limited. You can obtain contact details of the Accreditation Scheme at www.cibsecertification.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.

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Appendix B - Part L 2021 BRUKL Document and Draft EPC - Proposed Design

BRUKL Output Document

HM Government

Compliance with England Building Regulations Part L 2021

Project name **Shell and Core**

Proposed Design

As designed

Date: Tue Jan 21 16:00:41 2025

Administrative information

Building Details

Address: 30 New Compton Street, 167-177 Shaftesbury Avenue, London, WC2H 8AN

Certifier details

Name: Jason Welsh

Telephone number: 01206 489019

Address: EEABS, Suite 3, Aster House, Lanswood Park, Elmstead Market, Colchester, CO7 7FD

Certification tool

Calculation engine: TAS

Calculation engine version: "v9.5.6"

Interface to calculation engine: TAS

Interface to calculation engine version: v9.5.6

BRUKL compliance module version: v6.1.e.0

Foundation area [m^2]: 137.76

The CO_2 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	1.56	
Building CO_2 emission rate (BER), $kgCO_2/m^2$.annum	4.71	
Target primary energy rate (TPER), kWh_{PE}/m^2.annum	16.27	
Building primary energy rate (BPER), kWh_{PE}/m^2.annum	49.89	
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	$U_{a\text{-}Limit}$	$U_{a\text{-}Calc}$	$U_{i\text{-}Calc}$	First surface with maximum value
Walls*	0.26	0.28	0.3	External Wall
Floors	0.18	0.25	0.25	Ground Floor
Pitched roofs	0.16	-	-	No pitched roofs in project
Flat roofs	0.18	-	-	No flat roofs in project
Windows** and roof windows	1.6	-	-	No windows or roof windows in project
Rooflights***	2.2	-	-	No rooflights in project
Personnel doors^	1.6	1.59	1.59	New Ext Door 1
Vehicle access & similar large doors	1.3	-	-	No vehicle access or similar large doors in project
High usage entrance doors	3	2.2	2.2	Ex Ent Door

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

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

* 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/m^2K

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	15

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- Extract (3 Zones)

	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- MVHR (B - Retail)

	Heating efficiency	**Cooling efficiency**	**Radiant efficiency**	**SFP [W/(l/s)]**	**HR efficiency**
This system	1	-	-	-	0.85
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

1- Elec HW

	Water heating efficiency	**Storage loss factor [kWh/litre per day]**
This building	1	0
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	**SFP [W/(l/s)]**									**HR efficiency**	
ID of system type	**A**	**B**	**C**	**D**	**E**	**F**	**G**	**H**	**I**		
Standard value	0.3	1.1	0.5	2.3	2	0.5	0.5	0.4	1	**Zone**	**Standard**
GF - Staff Area	0.3	-	-	-	-	-	-	-	-	-	N/A
GF - Toilets	0.3	-	-	-	-	-	-	-	-	-	N/A
B - Retail	-	-	-	1.2	-	-	-	-	-	-	N/A
B - Toilet	0.3	-	-	-	-	-	-	-	-	-	N/A

Shell and core configuration

Zone	**Assumed shell?**
GF - Staff Area	NO
GF - Toilets	NO
B - Retail	YES
B - Toilet	NO

General lighting and display lighting	General luminaire	Display light source	
Zone name	**Efficacy [lm/W]**	**Efficacy [lm/W]**	**Power density [W/m²]**
Standard value	95	80	0.3
GF - Retail	120	95	-
GF - Staff Area	120	-	-
GF - Toilets	120	-	-
B - Retail	120	95	-
B - Store	120	-	-
B - Toilet	120	-	-
Stair 1	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?
GF - Retail	YES (+111%)	NO
GF - Staff Area	N/A	N/A
B - Retail	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]	523	523
External area [m^2]	382	382
Weather	LON	LON
Infiltration [m^3/hm^2@ 50Pa]	15	3
Average conductance [W/K]	184	100
Average U-value [W/m^2K]	0.48	0.26
Alpha value* [%]	23.44	8.44

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

Building Use

% Area	Building Type
100	**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
	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/m^2]

	Actual	Notional
Heating	10.87	0.29
Cooling	0	0
Auxiliary	2.77	2.54
Lighting	17.26	15.39
Hot water	1.58	1.5
Equipment*	19.7	19.7
TOTAL**	**32.48**	**19.71**

* 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^2]

	Actual	Notional
Photovoltaic systems	0	8.74
Wind turbines	0	0
CHP generators	0	0
Solar thermal systems	0	0
Displaced electricity	*0*	*8.74*

Energy & CO_2 Emissions Summary

	Actual	Notional
Heating + cooling demand [MJ/m^2]	39.13	1.48
Primary energy [kWh_{PE}/m^2]	49.89	16.27
Total emissions [kg/m^2]	4.71	1.56

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] Unflued radiant heater, [HS] Direct or storage electric heater, [HFT] Electricity, [CFT] Electricity										
	Actual	240.6	0	66.8	0	0	1	0	1	0
	Notional	38.4	0	8	0	0	1.34	0	----	----
[ST] Unflued radiant heater, [HS] Direct or storage electric heater, [HFT] Electricity, [CFT] Electricity										
	Actual	62.4	0	17.4	0	5.6	1	0	1	0
	Notional	0.2	0	0.1	0	5.4	1.34	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

Energy Performance Certificate

Non-Domestic Building

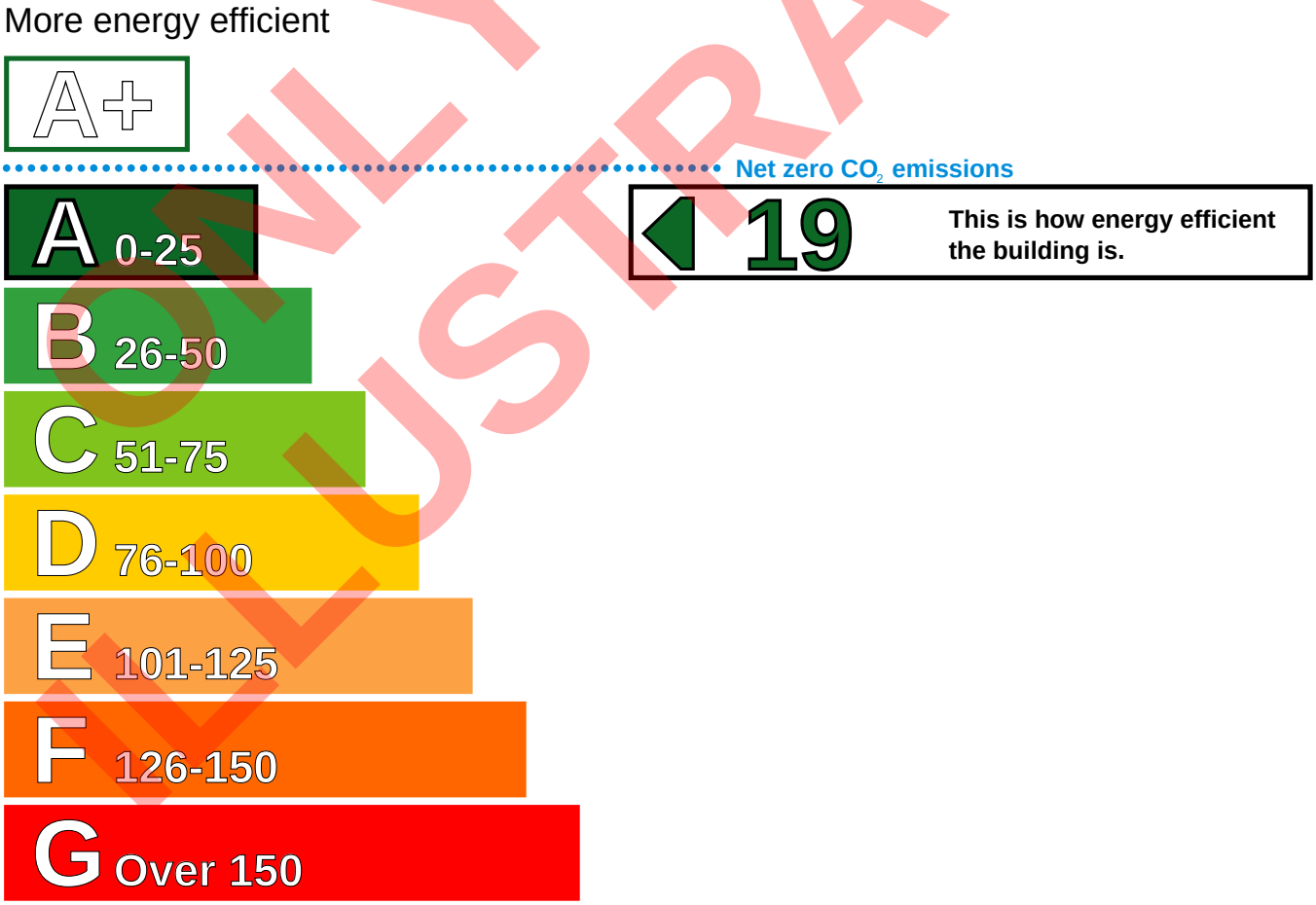
HM Government

30 New Compton Street
167-177 Shaftesbury Avenue
London
WC2H 8AN

Certificate Reference Number:
1035-9688-3879-3772-7159

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



Technical information

Main heating fuel:	Grid Supplied Electricity
Building environment:	Heating and Natural Ventilation
Total useful floor area (m^2):	523
Building complexity:	Level 5
Building emission rate ($kgCO_2/m^2$ per year):	4.71
Primary energy use (kWh_{PE}/m^2 per year):	49.89

Benchmarks

Buildings similar to this one could have ratings as follows:

6 If newly built

26 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:	TAS v9.5.6 using calculation engine TAS v9.5.6
Property Reference:	
Assessor Name:	Jason Welsh
Assessor Number:	LCEA122167
Accreditation Scheme:	CIBSE Certification Limited
Assessor Qualifications:	NOS5
Employer/Trading Name:	Elmstead Energy Assessors & Building Services
Employer/Trading Address:	Suite 3, Aster House, Lanswood Park, Elmstead Market, Colchester, CO7 7FD
Issue Date:	21 Jan 2025
Valid Until:	20 Jan 2035 (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: 1420-5093-6566-3509-7149

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 CIBSE Certification Limited. You can obtain contact details of the Accreditation Scheme at www.cibsecertification.com.

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