REVISION A

Energy Statement
for 8-9 Spring Place Redevelopment

8-9 Spring Place, London

Prepared by Eteria

for Stamos Yeoh Architects

Table of Contents

Document Revision

Author	Checked by	Document Reference
Aftab Mehmood	Evan Rodis	0076-ETE-SP-ZZ-R-S-001

Revision Date	Revision No.	Notes
30/11/2024	A	For Comments
18/12/2024	B	For Planning

1 Executive Summary

Eteria has been appointed by Stamos Yeoh Architects to provide an energy statement for the proposed redevelopment of the existing building at 8-9 Spring Place, located in London, to a hotel. The proposed redevelopment consists of 30 bedrooms, ensuite bathrooms, reception and other transient spaces.

This report describes the assessment of options considered for reducing the CO2 emissions through energy efficiency measures, the efficient supply of heat and hot water and the use of on-site renewable energy technologies, having regard to the characteristics of the site and the local environment.

The development CO2 emission savings calculated are aligned to the London Plan's energy hierarchy. The Site Wide Energy Strategy and The London Plan sets the following zero-carbon target for the development:

- CO2 emissions savings of at least 15% of energy efficiency measures (Be Lean); and
- Total combined CO2 emissions savings of at least 35% for all on-site carbon reduction measures including the Be Lean, Be Clean and Be Green design measures.
- The difference between the total on-site emissions reduction and regulated zero-carbon must be reported and an offset payment agreed with the Local Authority's carbon offset fund.

The energy strategy for the proposed development incorporates the following key measures.

Demand Reduction

- New and renovated/retained thermal elements (floor)
- New controlled fittings (windows)
- High efficacy lighting using LED lamps/light sources (120lm/W) with efficient lighting controls

Heating and cooling

- An all-electric heating strategy has been utilised, with all occupied rooms heated by electric panel heaters.

Renewable Energy

- Air-source heat pump providing for the total domestic hot water demand.
- 175m2 of solar PV (Photovoltaic) panels on the roof.

CO^2 emissions after each stage of the energy hierarchy are shown in Table 1.

Carbon Dioxide Emissions for non-residential buildings (Tonnes per CO2 per annum)		
	Regulated	Unregulated
Baseline: Part L 2021 of the Building Regulations Compliant Development	32.8	2.1
After energy demand reduction (be lean)	27.8	2.1
After heat network connection (be clean)	27.8	2.1
After renewable energy	21.3	2.1

Figure 1: Carbon dioxide emissions after each stage of the energy hierarchy in non-residential buildings

The performance of the proposed development in relation to the London Plan's targets is set out in Table 2.

Regulated non-residential carbon dioxide savings		
	(Tonnes CO2 per Annum)	(%)
Be lean: savings from energy demand reduction	5.0	15%
Be clean: savings from heat network	0.0	0%
Be green: savings from renewable energy	6.6	35%
Cumulative on-site savings	640	-

Figure 2: Regulated carbon dioxide savings from each stage of the energy hierarchy for non-residential buildings

District heating is not viable for the development as there are no district heat networks in the local area. Therefore, the Be Clean stage is not applicable to this building.

A variety of demand reduction measures have been proposed and are sufficient to show a modest improvement over the baseline.

The proposed PV design has also allowed the building to surpass the minimum 35% target for Be Green.

2 Introduction

This energy assessment report has been prepared to accompany the planning application for the redevelopment of 8-9 Spring Place in London. Commissioned by the applicant and authored by Eteria Limited, the report demonstrates compliance with planning policies related to operational energy performance and carbon dioxide emissions.

The proposal involves the refurbishment and redevelopment of the existing building into a 30-bedroom hotel offering guest accommodations. The redevelopment will include upgrades to the building fabric, where feasible, to enhance the energy efficiency and sustainability of the building.

Figure 3: Image of the site location

3 Regulatory Context

3.1 Development Control

The following planning policies and guidance are relevant to the proposed development's operational energy use and carbon dioxide emissions.

<u>National</u>

- National Planning Policy Framework (2021)
    - Planning for climate change (paragraphs 153-158)

<u>Regional</u>

- The London Plan (2021)
    - Policies SI 2 *Minimising greenhouse gas emissions Energy Assessment* Guidance, SI 3 *Energy Infrastructure*, SI 4 *Managing heat risk*
- Energy Assessment Guidance (2022)

<u>Local</u>

- Camden Local Plan (2017)
    - Policy CC1 Climate change mitigation
- Camden Planning Guidance: Energy efficiency and adaptation (2021)

In essence, the relevant regional and local planning policy and guidance is aligned. One of the key concepts is the following energy hierarchy.

- Demand reduction (Be Lean)
- Heating infrastructure (Be Clean)
- Renewable Energy (Be Green)
- Offset

3.2 Building Control

If planning permission were granted, the proposed development would be required to comply with the Building Regulations.

Part L of the Building Regulations covers conservation of fuel and power and was recently revised. Relevant guidance is set out in the following documents.

- Approved Document L Volume 2: Buildings other than dwellings (ADL2)

This energy assessment report does not cover Part L compliance.

4 Methodology

The Energy Assessment report has been prepared in line with the GLA's Energy Assessment Guidance.

The calculation methodologies are those used to demonstrate compliance with Part L of the Building Regulations. Part L 2021 (England) regulates the following end uses: heating; hot water; cooling; fans; pumps and controls ('auxiliary'); and lighting. The following unregulated end uses have also been reported.

- Equipment (calculated in accordance with NCM)

The calculation methodologies and software used are as follows.

- Calculation methodology: dynamic simulation modelling (DSM)
- Calculation engine Apache (version 24)
- Interface: IES Virtual Environment (version 24)
- BRUKL compliance check; version V6.1e.1

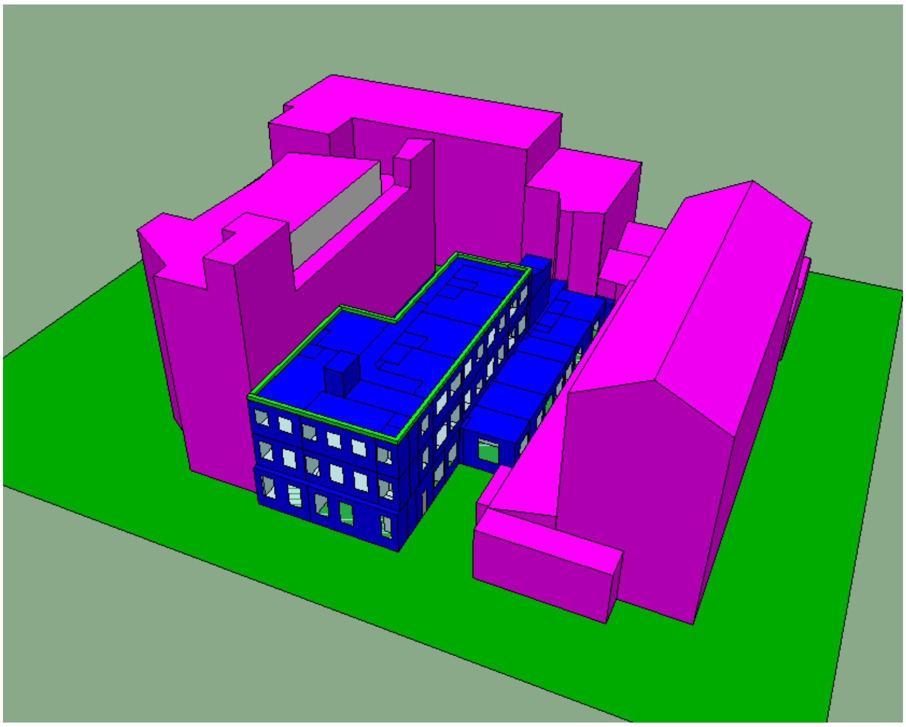

Figure 4: Image of virtual model from IES Virtual Environment Software

5 Establishing CO_2 Emissions (Baseline)

Where major refurbishments are being carried out, an estimate of the CO_2 savings from the refurbishment of the building is expected. To provide this, applicants are required to estimate the CO_2emission baseline performance of the existing building using Building Regulations approved compliance software.

Baseline CO_2 emissions are calculated using the 'notional' specification for existing buildings, which is based on ADL2 and set out in Appendix 3 of the of the GLA's Energy Assessment Guidance. This is intended to provide a consistent baseline across all refurbishments and to clearly distinguish the improvements in CO_2 emissions that are over and above what would ordinarily be undertaken through meeting Building Regulation requirements.

The GLA's Energy Assessment Guidance notes that there will be instances where the energy performance of existing elements exceeds that set out in the 'notional' specification, in which case the actual energy performance of the building element should be used instead.

The baseline CO_2 emissions are summarised in Table 3.

Assessment	Total regulated emissions (Tonnes CO_2 emissions / year)	Improved over previous stage of energy hierarchy (%)	Improvement over baseline (%)
Baseline	32.8	n/a	n/a

Figure 5: Regulated carbon dioxide savings at baseline stage of the energy hierarchy

6 Demand Reduction (Be Lean)

6.1 Approach

Demand reduction measures typically include both architectural and building fabric measures (passive design) and energy efficient services (active design). Passive design measures are often preferable, as they tend to be simpler and to have greater longevity than active design measures.

However, managing energy demand is only one of many design drivers of site layout and building form. Furthermore, in this case, as the proposed development comprises predominantly of refurbishment works, the opportunities to influence the passive design are limited.

The passive design measures are summarised in Table 4 below.

Stage of Hierarchy	Relevant Design Proposals
External Wall	0.18 W/m²K
Roof	0.18 W/m²K
Ground Floor	0.58 W/m²K
Windows	1.2 W/m²K
Rooflight	1.4 W/m²K
Pedestrian Door	1.6 W/m²K
High Usage Entrance Door	3.0 W/m²K
Visual Element g-value	0.35
Air Permeability	7 m³/h.m²@50Pa
Thermal Bridging	Default
Heating and Hot Water	Heating: Electric Panel Heaters (EPH) Hot Water: Calorifier served via air-source heat pump (ASHP)
Cooling	N/A
Ventilation	Local Extract in Ensuites (SFP=0.3)
Lighting	120lm/W

Figure 6: 'Be Lean' energy performance specification

The glazing area makes up 18.6% of the total façade area.

6.2 CO_2 Emissions

The CO_2 emissions taking into account demand reduction measures are summarised in Table 5.

Assessment	Total regulated emissions (Tonnes CO_2 emissions / year)	Improved over previous stage of energy hierarchy (%)	Improvement over baseline (%)
Be Lean	27.8	15	15

Figure 7: Regulated carbon dioxide savings at 'be lean' stage of the energy hierarchy

6.3 Commentary

The design approach follows the GLA's *Energy Assessment Guidance* for existing buildings, which *"have been developed to determine a consistent baseline across refurbishment planning applications… [rather than] to be prescriptive specifications for developments"*.

This baseline essentially assumes that all retained and refurbished thermal elements and controlled fittings will be upgraded to achieve the 'improved' U-values set out in section 4 of ADL2.

While fabric upgrades are proposed for the roof, external wall and glazed elements, in this case improvements to the ground floor may not be feasible as this is an existing building.

The proposed energy efficiency improvements to the fixed building services compensate for not being able to upgrade the ground floor. Overall, demand reduction measures achieve a 15% improvement over the baseline, which is in line with the target set out in the London Plan.

7 Heating Infrastructure (Be Clean)

7.1 Approach

The heating infrastructure for the proposed development has been considered in accordance with the GLA's *Energy Assessment Guidance*, which states that:

"To comply with London Plan Policy SI 3, developments in Heat Network Priority Areas (HNPAs) should have a communal low-temperature heating system and should select a heat source in accordance with the following heating hierarchy:

a) Connect to local existing or planned heat networks

b) Use zero-emission or local secondary heat sources (in conjunction with heat pump, if required)

c) Use low-emission combined heat and power (only where there is a case for it to enable the delivery of an area-wide network, meet the development's electricity demand and provide demand response to the local electricity network)

d) Use ultra-low nitrogen oxides (NO_x) gas boilers.

As this site does not lie within an HNPA, a communal low-temperature heating system has not been proposed.

<u>Connect to a local existing or planned heat networks</u>

The London Heat Map indicates that the closest proposed network (Magdala Avenue) is approximately 2.9km to the North and the closest existing network (The Royal Free Hospital) is approximately 2.6km to the North West. It is therefore not considered feasible to connect to an existing or proposed network at this stage.

<u>Use Zero-emission or local secondary heat sources</u>

The GLA's Energy Assessment Guidance states that:

"Secondary heat sources recover useful energy, in the form of heat, from sources where processes or activities produce heat which is normally wasted (for example recovering heat from the Underground network) or from heat that exists naturally within the environment (air, ground and water)."

The London Heat Map identifies communal boilers on Holmes Road which is 0.16 km from the development, as the nearest potential heat supply, with a CHP site on Weedington Road located 0.32 km away.

The proposed strategy prioritizes a low-carbon heat source through efficient electric heating, which offers superior carbon and energy efficiency compared to both gas and CHP systems. Considering this, along with the absence of existing infrastructure to support communal heating systems, utilizing these potential heat sources is not deemed feasible.

However, it is feasible to utilise the heat that exists naturally within the environment in the form of air, in conjunction with a heat pump. Under planning policy, heat pumps that do not serve district heat networks are considered at the ‘Be Green’ stage of the energy hierarchy.

7.2 CO_2 emissions

The CO_2 emissions at the ‘Be Clean’ stage are therefore the same as at the ‘Be Lean’ stage. For completeness, these are summarised in Table 6.

Assessment	Total regulated emissions (Tonnes CO_2 emissions / year)	Improved over previous stage of energy hierarchy (%)	Improvement over baseline (%)
Be Clean	27.8	15	15

Figure 8: Regulated carbon dioxide savings at ‘Be Clean’ stage of the energy hierarchy

7.3 Commentary

A justification of for not providing a communal low-temperature heating system is made, on the basis of the size of the development and the absence of local existing or proposed heat networks. Therefore, the CO_2 emissions at the ‘Be Clean’ stage are the same as at the ‘Be Lean’ stage.

8 Renewable Energy (Be Green)

8.1 Approach

Renewable energy for the proposed development has been considered in accordance with the GLA's *Energy Assessment Guidance*, which states that:

"Energy assessments should explain how the opportunities for producing, storing and using renewable energy on-site will be maximised, in line with Policy SI 2 of the London Plan. Within the main body of the energy assessment, detailed site-specific analysis should only be provided for those renewable technologies considered feasible."

A high-level appraisal of the main renewable energy technologies identified that the following are not feasible, due to the scale of the proposed development and it comprising predominantly of refurbishment works.

- Biofuel heating
- Biofuel combined heat and power
- Geothermal
- Fuel cells
- Hydrogen heating
- Hydroelectric
- Solar water heating
- Wind turbines

Two renewable energy technologies are considered to be achievable and compatible with the measures already implemented in steps one and two of the energy hierarchy: heat pumps and Photovoltaic (PV) panels.

8.2 Heat Pumps

An air-source heat pump dedicated to hot water provision has been proposed for this development, delivering an energy efficient and sustainable hot water solution. This ensures a reliable and consistent hot water supply while minimising energy consumption and staying in line with the London Plan sustainability targets. Table 7 sets out information about this heat pump system, in line with the GLA's *Energy Assessment Guidance*. This is intended to define the design intent, as final product selections are subject to design development.

Aspect	Performance
Seasonal Coefficient of Performance (SCOP)	3.5
Seasonal Energy Efficiency Ratio (SEER)	N/A
Compatibility with other heating/cooling technologies	N/A
Additional technology for top up	No
Domestic hot water (DHW) generation	Heat pump system
Post-construction monitoring	In line with the Be Seen policy

Figure 9: Information on Proposed Heat Pumps

8.3 Photovoltaic (PV) Panels

To achieve the 35% carbon emissions reduction required under the London Plan's "Be Green" stage, integrating on-site renewable technologies is essential. One effective strategy is the installation of solar photovoltaic (PV) panels. These panels directly harness solar energy to generate electricity, significantly reducing reliance on grid electricity and associated carbon emissions.

Table 8 shows the specification of the required PV to meet compliance.

PV Type	Module Nominal Efficiency (%)	Area (sqm)	Azimuth (° clockwise from North)	Inclination (° from Horizontal)
Monocrystalline Silicon	20.1	175	229	10

Figure 10: Information on Proposed PV panels

8.4 CO^2 Emissions

The CO^2 emissions considering renewable energy technologies are summarised in Table 9.

Assessment	Total regulated emissions (Tonnes CO_2 emissions / year)	Improved over previous stage of energy hierarchy (%)	Improvement over baseline (%)
Be Green	21.3	20	35

Figure 11: Regulated carbon dioxide savings at 'Be Clean' stage of the energy hierarchy

8.5 Commentary

There is a slight divergence between regional and local planning policy with respect to the renewable energy objectives: the GLA seeks the maximisation of on-site renewable energy generation, whereas London Borough of Camden sets a quantitative target (20%).

Table 9 shows that the 20% improvement required at Be Green stage from renewable technologies, set out in the local planning policy, has been achieved with the aid of air-source heat pump and solar PV.

9 Conclusion

9.1 Summary of Design Proposals

The energy statement for the proposed development incorporates the following key measures.

Demand Reduction

- New and renovated/retained thermal elements (floor)
- New controlled fittings (windows)
- High efficacy lighting using LED lamps/light sources (120lm/W) with efficient lighting controls

Renewable Energy

- Air-source heat pump providing for the total domestic hot water demand.
- 175m2 of solar PV (Photovoltaic) panels on the roof.

The building's carbon dioxide emissions after each stage of the energy hierarchy are shown in Table 10.

Carbon Dioxide Emissions (Tonnes CO2 per Annum)		
	Regulated	Unregulated
Baseline: Part L 2021 of the Building Regulations Compliant Development	32.8	34.9
After energy demand reduction (be lean)	27.8	29.9
After heat network connection (be clean)	27.8	29.9
After renewable energy	21.3	23.5

Figure 12: Carbon dioxide emissions after each stage of the energy hierarchy for residential buildings

The performance of the proposed development in relation to the London Plan's targets is set out in Table 11.

Regulated non-residential carbon dioxide savings		
	(Tonnes CO2 per Annum)	(%)
Be lean: savings from energy demand reduction	5.0	15%
Be clean: savings from heat network	0.0	0%
Be green: savings from renewable energy	6.6	35%
Cumulative on-site savings	640	-

Figure 13: Regulated carbon dioxide savings from each stage of the energy hierarchy

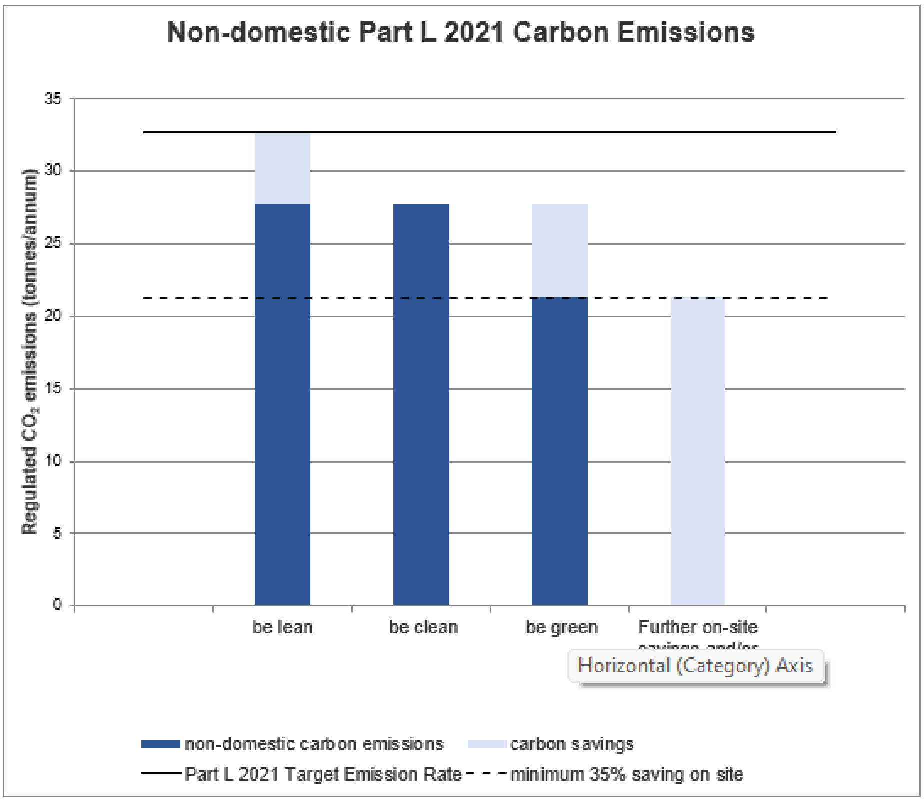

Figure 14: GLA Carbon Emissions

9.2 Planning Policy

To recap, for refurbishment projects, there are two primary objectives set out in Camden Planning Guidance: *Energy efficiency and adaptation.*

The first is the ‘greatest possible reduction" in CO_2 emissions from demand reduction, ‘meeting Part L1B for retained thermal elements".

Both passive and active design measures have been implemented in order to achieve the target 15% improvement over the baseline.

The second policy goal is a 20% reduction in CO_2 emissions through the use of renewable energy. This target is also being met through the use of an air-source heat pump dedicated to hot water provision and solar PV panels implemented on the roof.

The applicant commits to the key measures and CO_2 reductions identified for each stage of the energy hierarchy as set out in this Energy Assessment report.

Appendix A - Acronyms and Abbreviations

Acronym / Abbreviation	Definition
ADL1	Approved Document L Volume 1 (2021 edition)
ADL2	Approved Document L Volume 2 (2021 edition)
ASHP	Air-Source Heat Pump
BER	Building Emission Rate
BRUKL	Building Regulations UK Part L
CIBSE	Chartered Institution of Building Services Engineers
CO2	Carbon Dioxide
COP	Coefficient of Performance
CPG	Camden Planning Guidance
DNO	Distribution Network Operator
DSM	Dynamic Simulation Modelling
DSY	Design Summer Year
EAHP	Exhaust Air Heat Pump
EER	Energy Efficiency Ratio
EESCo	Energy Supply Company
EUI	Energy use intensity
EV	Electric Vehicle
GLA	Greater London Authority
HNPA	Heat Network Priority Area
HVAC	Heating Ventilation and Air Conditioning
IDNO	Independent Distribution Network Operator
LED	Light Emitting Diode
MVHR	Mechanical Ventilation with Heat Recovery
NOx	Nitrogen Oxides
SAP	Standard Assessment Procedure
SBEM	Simplified Building Energy Model
SCOP	Seasonal Coefficient of Performance
SEER	Seasonal Energy Efficiency Ratio

Acronym / Abbreviation	Definition
SFP	Specific Fan Power
TER	Target Emission Rate
TFEE	Target Fabric Energy Efficiency

Figure 15: Acronyms and abbreviations

Appendix B - Non-Domestic BRUKL Reports

BRUKL Output Document

Compliance with England Building Regulations Part L 2021

HM Government

Project name

8-9 Spring Place_Be Lean — As built

Date: Tue Nov 26 17:42:36 2024

Administrative information

Building Details

Address: 8-9 Spring Place, London, NW5 ER

Certifier details

Name: Name

Telephone number: Phone

Address: Street Address, City, Postcode

Certification tool

Calculation engine: Apache

Calculation engine version: 7.0.27

Interface to calculation engine: IES Virtual Environment

Interface to calculation engine version: 7.0.27

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

Foundation area [m²]: 269.32

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), $kgCO_2/m^2.annum$	15.84	
Building CO_2 emission rate (BER), $kgCO_2/m^2.annum$	23.12	
Target primary energy rate (TPER), $kWh_{PE}/m^2.annum$	169	
Building primary energy rate (BPER), $kWh_{PE}/m^2.annum$	245.65	
Do the building's emission and primary energy rates exceed the targets?	BER > TER	BPER > TPER

The performance of the building fabric and fixed building services should achieve reasonable overall standards of energy efficiency

Fabric element	$U_{a-Limit}$	U_{a-Calc}	U_{i-Calc}	First surface with maximum value
Walls*	0.26	0.18	0.18	L000000F:Surf[3]
Floors	0.18	0.58	0.58	L0000062:Surf[0]
Pitched roofs	0.16	0.18	0.18	L0000011:Surf[4]
Flat roofs	0.18	0.18	0.18	L0000021:Surf[1]
Windows** and roof windows	1.6	1.2	1.2	L000006A:Surf[0]
Rooflights***	2.2	1.4	1.4	L0000063:Surf[1]
Personnel doors^	1.6	1.6	1.6	L000000F:Surf[2]
Vehicle access & similar large doors	1.3	-	-	No vehicle access doors in building
High usage entrance doors	3	3	3	L0000068:Surf[1]

$U_{a-Limit}$ = Limiting area-weighted average U-values [W/(m²K)]
U_{a-Calc} = Calculated area-weighted average U-values [W/(m²K)]
U_{i-Calc} = Calculated maximum individual element U-values [W/(m²K)]

* Automatic U-value check by the tool does not apply to curtain walls whose limiting standard is similar to that for windows.

** Display windows and similar glazing are excluded from the U-value check.

*** Values for rooflights refer to the horizontal position.

^ For fire doors, limiting U-value is 1.8 W/m²K

NB: Neither roof ventilators (inc. smoke vents) nor swimming pool basins are modelled or checked against the limiting standards by the tool.

Air permeability	Limiting standard	This building
$m^3/(h.m^2)$ at 50 Pa	8	7

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- EPH+NV

	Heating efficiency	**Cooling efficiency**	**Radiant efficiency**	**SFP [W/(l/s)]**	**HR efficiency**
This system	1	-	0.2	-	-
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- DHW- Notional ASHP

	Water heating efficiency	**Storage loss factor [kWh/litre per day]**
This building	2.86	-
Standard value	2*	N/A

* Standard shown is for all types except absorption and gas engine heat pumps.

"No zones in project where local mechanical ventilation, exhaust, or terminal unit is applicable"

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
L00: Corridor 01	120	-	-
L00: Corridor 02	120	-	-
L00: Corridor 03	120	-	-
L00: Corridor 04	120	-	-
L00: Corridor 05	120	-	-
L00: Corridor 06	120	-	-
L00: Corridor 07	120	-	-
L00: Corridor 08	120	-	-
L00: Corridor 09	120	-	-
L00: Entrace Lobby	120	-	-
L00: G1_EN/S	120	-	-
L00: G1_Quad	120	-	-
L00: G2_EN/S	120	-	-
L00: G2_Quad	120	-	-
L00: G3_EN/S	120	-	-
L00: G3_Single	120	-	-
L00: G4_Double	120	-	-
L00: G4_EN/S	120	-	-
L00: G5_EN/S	120	-	-
L00: G5_Triple	120	-	-
L00: G6_EN/S	120	-	-
L00: G6_Quad	120	-	-
L00: G7_EN/S	120	-	-
L00: G7_Quad	120	-	-
L00: G8_Double	120	-	-

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
L00: G8_EN/S	120	-	-
L00: G9_EN/S	120	-	-
L00: G9_Quad	120	-	-
L00: G10_Double	120	-	-
L00: G10_EN/S	120	-	-
L00: G11_Double	120	-	-
L00: G11_EN/S	120	-	-
L00: G12_Double	120	-	-
L00: G12_EN/S	120	-	-
L00: G13_Double	120	-	-
L00: G13_EN/S	120	-	-
L00: G14_Double	120	-	-
L00: G14_EN/S	120	-	-
L00: G15_Double	120	-	-
L00: G15_EN/S	120	-	-
L00: G16_Double	120	-	-
L00: G16_EN/S	120	-	-
L00: Reception	120	120	1.125
L00: Storage 01	120	-	-
L00: Storage 02	120	-	-
L01: 101_EN/S	120	-	-
L01: 101_Triple	120	-	-
L01: 102_Double	120	-	-
L01: 102_EN/S	120	-	-
L01: 103_EN/S	120	-	-
L01: 103_Quad	120	-	-
L01: 104_EN/S	120	-	-
L01: 104_Triple	120	-	-
L01: 105_EN/S	120	-	-
L01: 105_Quad	120	-	-
L01: 106_EN/S	120	-	-
L01: 106_Triple	120	-	-
L01: 107_Double	120	-	-
L01: 107_EN/S	120	-	-
L01: Corridor 01	120	-	-
L01: Corridor 02	120	-	-
L01: Lobby	120	-	-
L01: Stair 01	120	-	-
L01: Stair 02	120	-	-
L02: 201_EN/S	120	-	-
L02: 201_Triple	120	-	-
L02: 202_Double	120	-	-
L02: 202_EN/S	120	-	-

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
L02: 203_EN/S	120	-	-
L02: 203_Quad	120	-	-
L02: 204_EN/S	120	-	-
L02: 204_Triple	120	-	-
L02: 205_EN/S	120	-	-
L02: 205_Quad	120	-	-
L02: 206_EN/S	120	-	-
L02: 206_Triple	120	-	-
L02: 207_Double	120	-	-
L02: 207_EN/S	120	-	-
L02: Corridor 01	120	-	-
L02: Corridor 02	120	-	-
L02: Lobby	120	-	-
L02: Stair 01	120	-	-
L02: Stair 02	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?
L00: G1_Quad	NO (-57.2%)	NO
L00: G2_Quad	NO (-50.4%)	NO
L00: G3_Single	NO (-74.8%)	NO
L00: G4_Double	NO (-79.4%)	NO
L00: G5_Triple	NO (-88.4%)	NO
L00: G6_Quad	NO (-96.8%)	NO
L00: G7_Quad	NO (-77.4%)	NO
L00: G8_Double	NO (-95.1%)	NO
L00: G9_Quad	NO (-90.1%)	NO
L00: G10_Double	NO (-78.5%)	NO
L00: G11_Double	NO (-90%)	NO
L00: G12_Double	NO (-91%)	NO
L00: G13_Double	NO (-89%)	NO
L00: G14_Double	NO (-87.2%)	NO
L00: G15_Double	NO (-93.4%)	NO
L00: G16_Double	NO (-88.8%)	NO
L00: Reception	NO (-66.4%)	NO
L01: 101_Triple	NO (-44.6%)	NO
L01: 102_Double	NO (-64.7%)	NO
L01: 103_Quad	NO (-54.4%)	NO
L01: 104_Triple	NO (-67.5%)	NO
L01: 105_Quad	NO (-76.9%)	NO
L01: 106_Triple	NO (-68.6%)	NO
L01: 107_Double	NO (-53.6%)	NO
L02: 201_Triple	NO (-56.8%)	NO

Zone	Solar gain limit exceeded? (%)	Internal blinds used?
L02: 202_Double	NO (-68.8%)	NO
L02: 203_Quad	NO (-64.4%)	NO
L02: 204_Triple	NO (-63.4%)	NO
L02: 205_Quad	NO (-75.2%)	NO
L02: 206_Triple	NO (-72%)	NO
L02: 207_Double	NO (-60.6%)	NO

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]	1200.6	1200.6
External area [m^2]	2053.2	2053.2
Weather	LON	LON
Infiltration [m^3/hm^2@ 50Pa]	7	3
Average conductance [W/K]	787.99	718.1
Average U-value [W/m^2K]	0.38	0.35
Alpha value* [%]	25.25	10

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

Building Use

% Area	Building Type
	Retail/Financial and Professional Services
	Restaurants and Cafes/Drinking Establishments/Takeaways
	Offices and Workshop Businesses
	General Industrial and Special Industrial Groups
	Storage or Distribution
100	**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	63.53	29.94
Cooling	0	0
Auxiliary	3.62	4.17
Lighting	6.32	7.34
Hot water	86.67	79.33
Equipment*	12.79	12.79
TOTAL**	**160.13**	**120.79**

* 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	7.38
Wind turbines	0	0
CHP generators	0	0
Solar thermal systems	0	0
Displaced electricity	*0*	*7.38*

Energy & CO_2 Emissions Summary

	Actual	Notional
Heating + cooling demand [MJ/m^2]	228.7	152.03
Primary energy [kWh_{PE}/m^2]	245.66	169
Total emissions [kg/m^2]	23.12	15.84

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	339.8	0	94.4	0	0	1	0	1	0
	Notional	225.9	0	44.5	0	0	1.41	0	----	----
[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

BRUKL Output Document

Compliance with England Building Regulations Part L 2021

HM Government

Project name

8-9 Spring Place_Baseline

As built

Date: Tue Nov 26 17:37:17 2024

Administrative information

Building Details

Address: 8-9 Spring Place, London, NW5 ER

Certification tool

Calculation engine: Apache

Calculation engine version: 7.0.27

Interface to calculation engine: IES Virtual Environment

Interface to calculation engine version: 7.0.27

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

Certifier details

Name: Name

Telephone number: Phone

Address: Street Address, City, Postcode

Foundation area [m²]: 269.32

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), $kgCO_2/m^2.annum$	15.84	
Building CO_2 emission rate (BER), $kgCO_2/m^2.annum$	27.29	
Target primary energy rate (TPER), $kWh_{PE}/m^2.annum$	169	
Building primary energy rate (BPER), $kWh_{PE}/m^2.annum$	289.3	
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	0.55	0.55	L000000F:Surf[3]
Floors	0.18	0.25	0.25	L0000062:Surf[0]
Pitched roofs	0.16	0.18	0.18	L0000011:Surf[4]
Flat roofs	0.18	0.18	0.18	L0000021:Surf[1]
Windows** and roof windows	1.6	1.4	1.4	L000006A:Surf[0]
Rooflights***	2.2	1.4	1.4	L0000063:Surf[1]
Personnel doors^	1.6	1.6	1.6	L000000F:Surf[2]
Vehicle access & similar large doors	1.3	-	-	No vehicle access doors in building
High usage entrance doors	3	3	3	L0000068:Surf[1]

$U_{a\text{-}Limit}$ = Limiting area-weighted average U-values [W/(m²K)]
$U_{i\text{-}Calc}$ = Calculated maximum individual element U-values [W/(m²K)]
$U_{a\text{-}Calc}$ = Calculated area-weighted average U-values [W/(m²K)]

* Automatic U-value check by the tool does not apply to curtain walls whose limiting standard is similar to that for windows.

** Display windows and similar glazing are excluded from the U-value check.

*** Values for rooflights refer to the horizontal position.

^ For fire doors, limiting U-value is 1.8 W/m²K

NB: Neither roof ventilators (inc. smoke vents) nor swimming pool basins are modelled or checked against the limiting standards by the tool.

Air permeability	Limiting standard	This building
m³/(h.m²) 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- EPH+NV

	Heating efficiency	**Cooling efficiency**	**Radiant efficiency**	**SFP [W/(l/s)]**	**HR efficiency**
This system	1	-	0.2	-	-
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- DHW- Notional ASHP

	Water heating efficiency	**Storage loss factor [kWh/litre per day]**
This building	2.86	-
Standard value	2*	N/A
* Standard shown is for all types except absorption and gas engine heat pumps.		

"No zones in project where local mechanical ventilation, exhaust, or terminal unit is applicable"

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
L00: Corridor 01	60	-	-
L00: Corridor 02	60	-	-
L00: Corridor 03	60	-	-
L00: Corridor 04	60	-	-
L00: Corridor 05	60	-	-
L00: Corridor 06	60	-	-
L00: Corridor 07	60	-	-
L00: Corridor 08	60	-	-
L00: Corridor 09	60	-	-
L00: Entrace Lobby	60	-	-
L00: G1_EN/S	60	-	-
L00: G1_Quad	60	-	-
L00: G2_EN/S	60	-	-
L00: G2_Quad	60	-	-
L00: G3_EN/S	60	-	-
L00: G3_Single	60	-	-
L00: G4_Double	60	-	-
L00: G4_EN/S	60	-	-
L00: G5_EN/S	60	-	-
L00: G5_Triple	60	-	-
L00: G6_EN/S	60	-	-
L00: G6_Quad	60	-	-
L00: G7_EN/S	60	-	-
L00: G7_Quad	60	-	-
L00: G8_Double	60	-	-

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
L00: G8_EN/S	60	-	-
L00: G9_EN/S	60	-	-
L00: G9_Quad	60	-	-
L00: G10_Double	60	-	-
L00: G10_EN/S	60	-	-
L00: G11_Double	60	-	-
L00: G11_EN/S	60	-	-
L00: G12_Double	60	-	-
L00: G12_EN/S	60	-	-
L00: G13_Double	60	-	-
L00: G13_EN/S	60	-	-
L00: G14_Double	60	-	-
L00: G14_EN/S	60	-	-
L00: G15_Double	60	-	-
L00: G15_EN/S	60	-	-
L00: G16_Double	60	-	-
L00: G16_EN/S	60	-	-
L00: Reception	60	15	9
L00: Storage 01	60	-	-
L00: Storage 02	60	-	-
L01: 101_EN/S	60	-	-
L01: 101_Triple	60	-	-
L01: 102_Double	60	-	-
L01: 102_EN/S	60	-	-
L01: 103_EN/S	60	-	-
L01: 103_Quad	60	-	-
L01: 104_EN/S	60	-	-
L01: 104_Triple	60	-	-
L01: 105_EN/S	60	-	-
L01: 105_Quad	60	-	-
L01: 106_EN/S	60	-	-
L01: 106_Triple	60	-	-
L01: 107_Double	60	-	-
L01: 107_EN/S	60	-	-
L01: Corridor 01	60	-	-
L01: Corridor 02	60	-	-
L01: Lobby	60	-	-
L01: Stair 01	60	-	-
L01: Stair 02	60	-	-
L02: 201_EN/S	60	-	-
L02: 201_Triple	60	-	-
L02: 202_Double	60	-	-
L02: 202_EN/S	60	-	-

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
L02: 203_EN/S	60	-	-
L02: 203_Quad	60	-	-
L02: 204_EN/S	60	-	-
L02: 204_Triple	60	-	-
L02: 205_EN/S	60	-	-
L02: 205_Quad	60	-	-
L02: 206_EN/S	60	-	-
L02: 206_Triple	60	-	-
L02: 207_Double	60	-	-
L02: 207_EN/S	60	-	-
L02: Corridor 01	60	-	-
L02: Corridor 02	60	-	-
L02: Lobby	60	-	-
L02: Stair 01	60	-	-
L02: Stair 02	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?
L00: G1_Quad	NO (-50.6%)	NO
L00: G2_Quad	NO (-42.7%)	NO
L00: G3_Single	NO (-70.9%)	NO
L00: G4_Double	NO (-76.2%)	NO
L00: G5_Triple	NO (-86.7%)	NO
L00: G6_Quad	NO (-96.8%)	NO
L00: G7_Quad	NO (-74%)	NO
L00: G8_Double	NO (-95.1%)	NO
L00: G9_Quad	NO (-90.1%)	NO
L00: G10_Double	NO (-75.2%)	NO
L00: G11_Double	NO (-90%)	NO
L00: G12_Double	NO (-91%)	NO
L00: G13_Double	NO (-89%)	NO
L00: G14_Double	NO (-85.2%)	NO
L00: G15_Double	NO (-92.4%)	NO
L00: G16_Double	NO (-88.8%)	NO
L00: Reception	NO (-61.2%)	NO
L01: 101_Triple	NO (-36.1%)	NO
L01: 102_Double	NO (-59.2%)	NO
L01: 103_Quad	NO (-47.4%)	NO
L01: 104_Triple	NO (-62.5%)	NO
L01: 105_Quad	NO (-73.3%)	NO
L01: 106_Triple	NO (-63.7%)	NO
L01: 107_Double	NO (-46.3%)	NO
L02: 201_Triple	NO (-50.2%)	NO

Zone	Solar gain limit exceeded? (%)	Internal blinds used?
L02: 202_Double	NO (-64%)	NO
L02: 203_Quad	NO (-59%)	NO
L02: 204_Triple	NO (-57.8%)	NO
L02: 205_Quad	NO (-71.4%)	NO
L02: 206_Triple	NO (-67.6%)	NO
L02: 207_Double	NO (-54.5%)	NO

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]	1200.6	1200.6
External area [m^2]	2053.2	2053.2
Weather	LON	LON
Infiltration [m^3/hm^2@ 50Pa]	25	3
Average conductance [W/K]	868.7	718.1
Average U-value [W/m^2K]	0.42	0.35
Alpha value* [%]	24.96	10

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

Building Use

% Area	Building Type
	Retail/Financial and Professional Services
	Restaurants and Cafes/Drinking Establishments/Takeaways
	Offices and Workshop Businesses
	General Industrial and Special Industrial Groups
	Storage or Distribution
100	**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	83.39	29.94
Cooling	0	0
Auxiliary	4.46	4.17
Lighting	13.27	7.34
Hot water	87.23	79.33
Equipment*	12.79	12.79
TOTAL**	**188.34**	**120.79**

* 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	7.38
Wind turbines	0	0
CHP generators	0	0
Solar thermal systems	0	0
Displaced electricity	*0*	*7.38*

Energy & CO_2 Emissions Summary

	Actual	Notional
Heating + cooling demand [MJ/m^2]	300.2	152.03
Primary energy [kWh_{PE}/m^2]	289.3	169
Total emissions [kg/m^2]	27.29	15.84

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	446.1	0	123.9	0	0	1	0	1	0
	Notional	225.9	0	44.5	0	0	1.41	0	----	----
[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

BRUKL Output Document

HM Government

Compliance with England Building Regulations Part L 2021

Project name

8-9 Spring Place_Be Green

As built

Date: Tue Nov 26 17:46:41 2024

Administrative information

Building Details

Address: 8-9 Spring Place, London, NW5 ER

Certification tool

Calculation engine: Apache

Calculation engine version: 7.0.27

Interface to calculation engine: IES Virtual Environment

Interface to calculation engine version: 7.0.27

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

Certifier details

Name: Name

Telephone number: Phone

Address: Street Address, City, Postcode

Foundation area [m²]: 269.32

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), $kgCO_2/m^2.annum$	15.84	
Building CO_2 emission rate (BER), $kgCO_2/m^2.annum$	17.68	
Target primary energy rate (TPER), $kWh_{PE}/m^2.annum$	169	
Building primary energy rate (BPER), $kWh_{PE}/m^2.annum$	184.34	
Do the building's emission and primary energy rates exceed the targets?	BER > TER	BPER > TPER

The performance of the building fabric and fixed building services should achieve reasonable overall standards of energy efficiency

Fabric element	$U_{a-Limit}$	U_{a-Calc}	U_{i-Calc}	First surface with maximum value
Walls*	0.26	0.18	0.18	L000000F:Surf[3]
Floors	0.18	0.58	0.58	L0000062:Surf[0]
Pitched roofs	0.16	0.18	0.18	L0000011:Surf[4]
Flat roofs	0.18	0.18	0.18	L0000021:Surf[1]
Windows** and roof windows	1.6	1.1	1.1	L000006A:Surf[0]
Rooflights***	2.2	1.4	1.4	L0000063:Surf[1]
Personnel doors^	1.6	1.6	1.6	L000000F:Surf[2]
Vehicle access & similar large doors	1.3	-	-	No vehicle access doors in building
High usage entrance doors	3	3	3	L0000068:Surf[1]

$U_{a-Limit}$ = Limiting area-weighted average U-values [W/(m²K)]

U_{a-Calc} = Calculated area-weighted average U-values [W/(m²K)]

U_{i-Calc} = Calculated maximum individual element U-values [W/(m²K)]

* Automatic U-value check by the tool does not apply to curtain walls whose limiting standard is similar to that for windows.

** Display windows and similar glazing are excluded from the U-value check.

*** Values for rooflights refer to the horizontal position.

^ For fire doors, limiting U-value is 1.8 W/m²K

NB: Neither roof ventilators (inc. smoke vents) nor swimming pool basins are modelled or checked against the limiting standards by the tool.

Air permeability	Limiting standard	This building
m³/(h.m²) at 50 Pa	8	7

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- EPH+NV

	Heating efficiency	**Cooling efficiency**	**Radiant efficiency**	**SFP [W/(l/s)]**	**HR efficiency**
This system	1	-	0.2	-	-
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- DHW- Notional ASHP

	Water heating efficiency	**Storage loss factor [kWh/litre per day]**
This building	3.5	-
Standard value	2*	N/A
* Standard shown is for all types except absorption and gas engine heat pumps.		

"No zones in project where local mechanical ventilation, exhaust, or terminal unit is applicable"

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
L00: Corridor 01	120	-	-
L00: Corridor 02	120	-	-
L00: Corridor 03	120	-	-
L00: Corridor 04	120	-	-
L00: Corridor 05	120	-	-
L00: Corridor 06	120	-	-
L00: Corridor 07	120	-	-
L00: Corridor 08	120	-	-
L00: Corridor 09	120	-	-
L00: Entrace Lobby	120	-	-
L00: G1_EN/S	120	-	-
L00: G1_Quad	120	-	-
L00: G2_EN/S	120	-	-
L00: G2_Quad	120	-	-
L00: G3_EN/S	120	-	-
L00: G3_Single	120	-	-
L00: G4_Double	120	-	-
L00: G4_EN/S	120	-	-
L00: G5_EN/S	120	-	-
L00: G5_Triple	120	-	-
L00: G6_EN/S	120	-	-
L00: G6_Quad	120	-	-
L00: G7_EN/S	120	-	-
L00: G7_Quad	120	-	-
L00: G8_Double	120	-	-

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
L00: G8_EN/S	120	-	-
L00: G9_EN/S	120	-	-
L00: G9_Quad	120	-	-
L00: G10_Double	120	-	-
L00: G10_EN/S	120	-	-
L00: G11_Double	120	-	-
L00: G11_EN/S	120	-	-
L00: G12_Double	120	-	-
L00: G12_EN/S	120	-	-
L00: G13_Double	120	-	-
L00: G13_EN/S	120	-	-
L00: G14_Double	120	-	-
L00: G14_EN/S	120	-	-
L00: G15_Double	120	-	-
L00: G15_EN/S	120	-	-
L00: G16_Double	120	-	-
L00: G16_EN/S	120	-	-
L00: Reception	120	50	2.7
L00: Storage 01	120	-	-
L00: Storage 02	120	-	-
L01: 101_EN/S	120	-	-
L01: 101_Triple	120	-	-
L01: 102_Double	120	-	-
L01: 102_EN/S	120	-	-
L01: 103_EN/S	120	-	-
L01: 103_Quad	120	-	-
L01: 104_EN/S	120	-	-
L01: 104_Triple	120	-	-
L01: 105_EN/S	120	-	-
L01: 105_Quad	120	-	-
L01: 106_EN/S	120	-	-
L01: 106_Triple	120	-	-
L01: 107_Double	120	-	-
L01: 107_EN/S	120	-	-
L01: Corridor 01	120	-	-
L01: Corridor 02	120	-	-
L01: Lobby	120	-	-
L01: Stair 01	120	-	-
L01: Stair 02	120	-	-
L02: 201_EN/S	120	-	-
L02: 201_Triple	120	-	-
L02: 202_Double	120	-	-
L02: 202_EN/S	120	-	-

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
L02: 203_EN/S	120	-	-
L02: 203_Quad	120	-	-
L02: 204_EN/S	120	-	-
L02: 204_Triple	120	-	-
L02: 205_EN/S	120	-	-
L02: 205_Quad	120	-	-
L02: 206_EN/S	120	-	-
L02: 206_Triple	120	-	-
L02: 207_Double	120	-	-
L02: 207_EN/S	120	-	-
L02: Corridor 01	120	-	-
L02: Corridor 02	120	-	-
L02: Lobby	120	-	-
L02: Stair 01	120	-	-
L02: Stair 02	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?
L00: G1_Quad	NO (-57.3%)	NO
L00: G2_Quad	NO (-50.4%)	NO
L00: G3_Single	NO (-74.8%)	NO
L00: G4_Double	NO (-79.4%)	NO
L00: G5_Triple	NO (-88.5%)	NO
L00: G6_Quad	NO (-96.8%)	NO
L00: G7_Quad	NO (-77.4%)	NO
L00: G8_Double	NO (-95.1%)	NO
L00: G9_Quad	NO (-90.1%)	NO
L00: G10_Double	NO (-78.5%)	NO
L00: G11_Double	NO (-90%)	NO
L00: G12_Double	NO (-91%)	NO
L00: G13_Double	NO (-89%)	NO
L00: G14_Double	NO (-87.2%)	NO
L00: G15_Double	NO (-93.4%)	NO
L00: G16_Double	NO (-88.8%)	NO
L00: Reception	NO (-66.4%)	NO
L01: 101_Triple	NO (-44.7%)	NO
L01: 102_Double	NO (-64.7%)	NO
L01: 103_Quad	NO (-54.4%)	NO
L01: 104_Triple	NO (-67.5%)	NO
L01: 105_Quad	NO (-76.9%)	NO
L01: 106_Triple	NO (-68.6%)	NO
L01: 107_Double	NO (-53.6%)	NO
L02: 201_Triple	NO (-56.9%)	NO

Zone	Solar gain limit exceeded? (%)	Internal blinds used?
L02: 202_Double	NO (-68.8%)	NO
L02: 203_Quad	NO (-64.5%)	NO
L02: 204_Triple	NO (-63.4%)	NO
L02: 205_Quad	NO (-75.3%)	NO
L02: 206_Triple	NO (-72%)	NO
L02: 207_Double	NO (-60.7%)	NO

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]	1200.6	1200.6
External area [m^2]	2053.2	2053.2
Weather	LON	LON
Infiltration [m^3/hm^2@ 50Pa]	7	3
Average conductance [W/K]	772.39	718.1
Average U-value [W/m^2K]	0.38	0.35
Alpha value* [%]	25.24	10

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

Building Use

% Area	Building Type
	Retail/Financial and Professional Services
	Restaurants and Cafes/Drinking Establishments/Takeaways
	Offices and Workshop Businesses
	General Industrial and Special Industrial Groups
	Storage or Distribution
100	**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	62.44	29.94
Cooling	0	0
Auxiliary	3.62	4.17
Lighting	6.39	7.34
Hot water	71.27	79.33
Equipment*	12.79	12.79
TOTAL**	**143.72**	**120.79**

* 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	24.89	7.38
Wind turbines	0	0
CHP generators	0	0
Solar thermal systems	0	0
Displaced electricity	*24.89*	*7.38*

Energy & CO_2 Emissions Summary

	Actual	Notional
Heating + cooling demand [MJ/m^2]	224.8	152.03
Primary energy [kWh_{PE}/m^2]	184.34	169
Total emissions [kg/m^2]	17.68	15.84

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	334	0	92.8	0	0	1	0	1	0
	Notional	225.9	0	44.5	0	0	1.41	0	----	----
[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

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