HODKINSON

Energy and Sustainability Statement

Designated Contractors Ltd

65 Holmes Road – 1st Floor Extension

Final

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DOCUMENT CONTROL RECORD
REPORT STATUS: FINAL

Version	Date	Reason for issue	Author	Checked by	Approved for Issue by Project Manager
v.1	21.12.2023	Final	D Berkow	Z Stebbings N Doshi	Z Stebbings

ABOUT HODKINSON CONSULTANCY

Our team of technical specialists offer advanced levels of expertise and experience to our clients. We have a wide experience of the construction and development industry and tailor teams to suit each individual project.

We are able to advise at all stages of projects from planning applications to handover.

Our emphasis is to provide innovative and cost-effective solutions that respond to increasing demands for quality and construction efficiency.

Executive Summary

The purpose of this Energy Statement and Sustainability Strategy is to demonstrate that the proposed extension of the 1st floor by 8 additional rooms at the consented development at 65-69 Holmes Road by Designated Contractors Ltd, in the London Borough of Camden is considered sustainable, as measured against relevant local, regional and national planning policies. The Energy Strategy has been formulated following the London Plan Energy Hierarchy: ***Be Lean***, ***Be Clean*** and ***Be Green***.

The proposed extension will comprise of approximately 8 rooms added on to the 1st floor of the completed development. This Energy Statement and Sustainability strategy is to support the separate full application for this extension, in the 65-69 Holmes Road student accommodation building.

The additional units in the extension proposal, which is considered a non-domestic area and is to be assessed as such, as a stand-alone application does not exceed the threshold of a 1,000m^2 and as such it forms a minor application. Therefore, it will seek to achieve **compliance** with the **Part L 2021 baseline**.

However, the extension will form part of the whole 65-69 Holmes Road student accommodation building which was designed and constructed to achieve a 25% carbon dioxide reduction under Part L 2010. Under these circumstances, it is reasonable for this statement to aim towards maximising the carbon reductions, in order to ensure that the 25% of the whole building under Part L 2010 will not be jeopardized.

A range of energy efficiency (***Be Lean***) measures are proposed to enable the additional level to meet Part L 2021 Target Emissions Rate (TER). This represents a good level of sustainable design and construction and indicates the Applicant's commitment to reducing energy demands The combination of energy efficiency measures will achieve compliance with the calculated Part L (2021) baseline.

In line with the London Plan, the feasibility of decentralised energy production as a ***Be Clean*** measure has been considered. This strategy assumes that the proposed extension to the 1st floor will connect to the boiler plant room at 65-69 Holmes Road.

The ***Be Green*** stage of the energy hierarchy has allowed for 9.45kWp of photovoltaics (PV).

The Table 1 below summarises the Regulated CO_2 emissions for the development after all on-site measures have been applied. A 37% reduction over the Part L (2021) baseline case is predicted.

Table 1: Summary of Reduction in Regulated CO_2 Emissions

	Regulated CO_2 Emissions (kg/yr)	Savings in Regulated CO_2 Emissions (kg/yr)	Reduction in Regulated CO_2 Emissions Achieved (%)
Baseline	315	-	-
After All Measures	198	117	**37.1%**

CONTENTS

1. INTRODUCTION

1.1 This Energy Statement and Sustainability Strategy has been prepared by Hodkinson Consultancy, a specialist energy and environmental consultancy for planning and development, appointed by Designated Contractors Ltd. This Statement sets out the energy strategy and BREEAM strategy for the proposed extension of the 1st floor by 8 additional rooms at 65-69 Holmes Road in the London Borough of Camden.

1.2 The formulation of the energy and sustainability strategy for the proposed development takes into account several important concerns and priorities. These include:

> To address all national, regional and local planning policies and requirements applicable to this application.

> To achieve the maximum viable reduction in carbon dioxide (CO_2) emissions with an affordable deliverable and technically appropriate strategy.

> Provision of high quality, low energy buildings that are adapted to future changes in climate.

> To address the requirements of BREEAM.

1.3 This statement first establishes a baseline assessment of the energy demands and associated CO_2 emissions for the development based on the relevant Building Regulations Part L (2021). It will then outline the energy measures that enable this.

1.4 The building was registered and certified under BREEAM New Construction 2014 (BREEAM-0062-3645) and achieved as built certification in July 2020.

2. DEVELOPMENT DESCRIPTION

Planning History

2.1 In October 2013 the 65-69 Holmes Road development was granted planning permission (2013/7130/P). The permission regarded the delivery of a part seven, part three-storey building (with 2 basement levels) with 273 units (341 rooms and 439 bed spaces) of student accommodation with ancillary facilities (sui generis), warehouse space and a coffee shop following demolition of the existing building.

2.2 The latest application that was granted consent (2017/6786/P), regarded changes to the lower basement's, increase in area and volume of the warehouse space and the reduction of ancillary student space (including the gym facility).

Existing Development

2.3 As per the approved scheme, the building has provided 273 units (439 bed spaces) of student accommodation and incorporates a mix of B8 warehouse space and student areas on the ground floor, upper and lower basement.

2.4 The consented energy strategy for the rest of the building includes energy efficiency measures with enhanced fabric performance, low energy lighting design, low energy mechanical ventilation and the design and operation of an energy centre to cover the heat demand through communal boilers and a CHP engine.

2.5 The existing 65-69 Holmes Road student accommodation building was designed and built to achieve a 25% carbon dioxide reduction over the Part L 2010 baseline. The existing development has provided the residents with further amenities such as shared communal space, a gym, a café, and cinema room.

Site Location

2.6 As shown in Figure 1 below, the proposed development site is located at 65-69 Holmes Road, north-west of the Kentish Town West station in the London Borough of Camden.

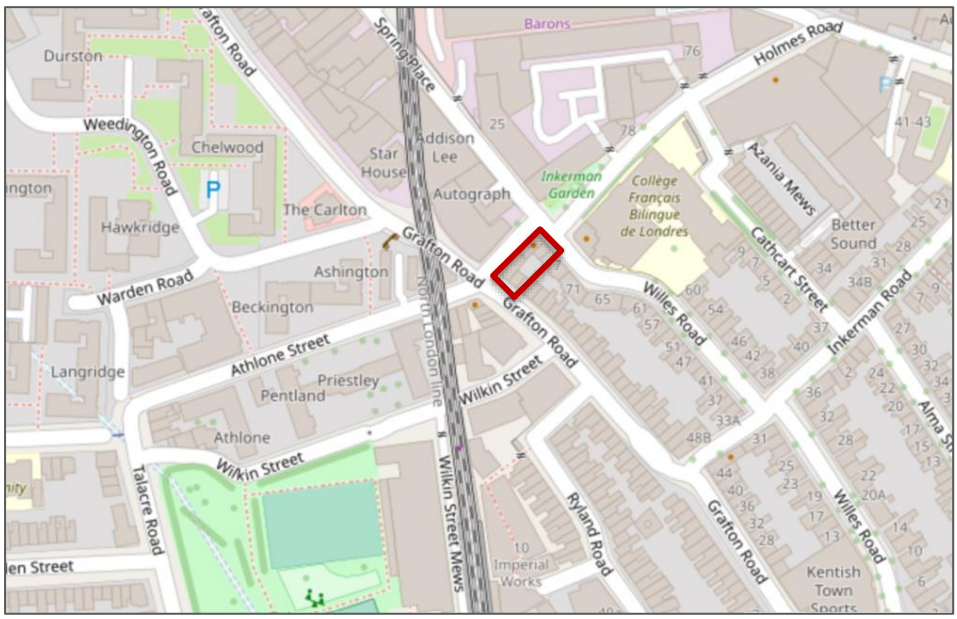


Figure 1: Site Location (OpenStreetMap, 2023)

Development Description

2.7 The proposed extension sits on top of the current student accommodation building that was proposed and consented in October 2013. It is circa 172m^2 and will comprise of an additional 8 room extension.

2.8 Rooms within the development have access to a kitchenette, double bed, and white goods. The rooms. The existing development includes bike storage, a café, lounge, cinema room, library, and a gym. Alongside this it has amenities to washing facilities.

2.9 Figure 2 below shows the layout of the proposed extension to the 1st floor.

Figure 2: Proposed 1st Floor Extension Plan (source: Contemporary Design Solutions, October 2022)

3. RELEVANT PLANNING POLICY

3.1 The planning policies and requirements in Figure 3 below have informed the sustainable design of the proposed development.

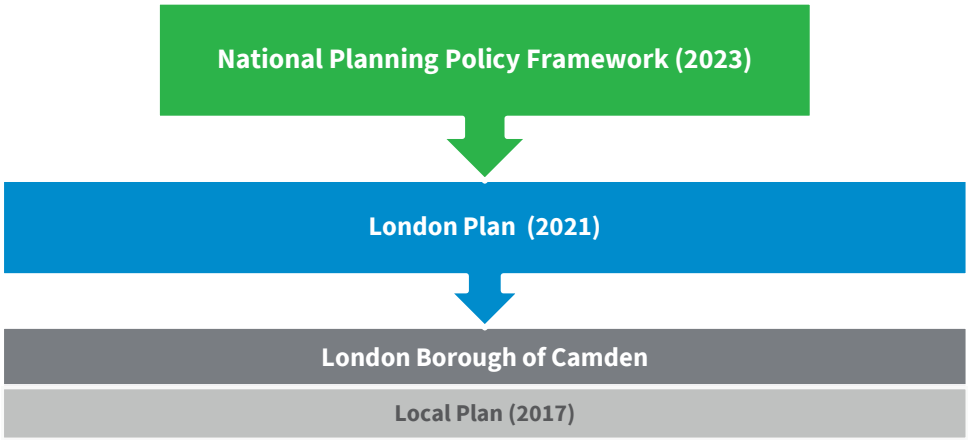


Figure 3: Relevant Planning Policy Documents

National Policy: NPPF

3.2 The revised National Planning Policy Framework (NPPF) was published on the 5th September 2023 and sets out the Government's planning policies for England.

3.3 The NPPF provides a framework for achieving sustainable development, which has been summarised as "*meeting the needs of the present without compromising the ability of future generations to meet their own needs*" (Resolution 42/187 of the United National General Assembly). At the heart of the framework is a **presumption in favour of sustainable development**.

3.4 The document states that the planning system has three overarching objectives which are interdependent and need to be pursued in mutually supportive ways:

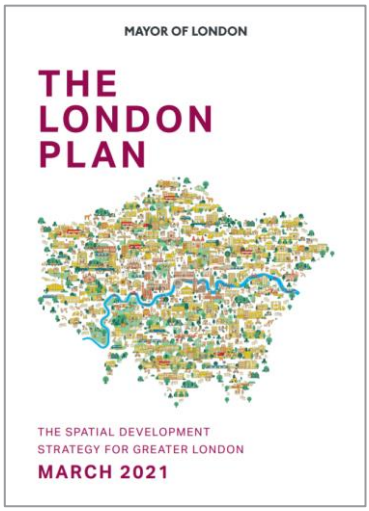
a) **An economic objective** – to help build a strong, responsive and competitive economy, by ensuring that sufficient land of the right types is available in the right places and at the right time to support growth, innovation and improved productivity; and by identifying and coordinating the provision of infrastructure;

b) **A social objective** – to support strong, vibrant and healthy communities, by ensuring that a sufficient number and range of homes can be provided to meet the needs of present and future generations; and by fostering a well-designed, beautiful and safe places, with accessible services and open spaces that reflect current and future needs and support communities' health, social and cultural well-being; and

c) **An environmental objective** – to protect and enhance our natural, built and historic environment; including making effective use of land, improving biodiversity, using natural resources prudently, minimising waste and pollution, and mitigating and adapting to climate change, including moving to a low carbon economy.

Regional Policy: The London Plan

The London Plan (2021)



3.5 The London Plan sets out an integrated economic, environmental, transport and social framework for the development of London. The following policies are considered relevant to the proposed development and this Statement:

3.6 **Policy G5 Urban Greening** states that urban greening should be included as a fundamental element of site and building design by incorporating measures such as landscaping, green roofs, green walls and nature-based sustainable drainage. Boroughs should develop an Urban Greening Factor and in the interim, the Mayor recommends a target score of 0.4 for residential development 0.3 for commercial development.

3.7 **Policy SI1 Improving Air Quality** states that development should seek opportunities to identify and deliver further improvements to air quality. Where emissions need to be reduced to meet the requirements of Air Quality Neutral or to make the impact of development on local air quality acceptable, this is done on-site.

3.8 **Policy SI2 Minimising Greenhouse Gas Emissions** states that major development should be net zero-carbon. This means reducing greenhouse gas emissions in operation and minimising both annual and peak energy demand.

3.9 **Policy SI3 Energy Infrastructure** states that energy masterplans should be developed for large-scale development locations which establish the most effective energy supply options.

3.10 **Policy SI4 Managing Heat Risk** states that major development proposals should demonstrate through an energy strategy how they will reduce the potential for internal overheating and reliance on air conditioning systems in accordance with the cooling hierarchy.

3.11 **Policy SI5 Water Infrastructure** states that in order to minimise the use of mains water, water supplies and resources should be protected and conserved in a sustainable manner. Development proposals should minimise the use of mains water in line with the Optional Requirement of the Building Regulations (residential development) achieving mains water consumption of 105 litres or less per head per day (excluding allowance of up to five litres for external water consumption). Commercial development should achieve at least the BREEAM excellent standard for the 'Wat 01' category.

3.12 **Policy SI7 Reducing Waste and Supporting the Circular Economy** states that referable applications should promote circular economy outcomes and aim to be net zero-waste.

3.13 **Policy T2 Healthy Streets** states that development should deliver patterns of land that facilitate residents making shorter, regular trips by walking or cycling. Development Plans should demonstrate the application of the Mayors Healthy Streets Approach.

Local Policy: London Borough of Camden

3.14 The London Borough of Camden's Local Plan document was adopted in July 2017. The following policies are considered relevant to this Statement:

3.15 **Policy CC1:** Climate Change Mitigation – 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:

> Require all developments to reduce carbon dioxide emissions through following the steps in the energy hierarchy.

> The Council will expect developments of five or more dwellings and/or more than 500 sqm of any gross internal floor space to achieve a 20% reduction in carbon dioxide emissions from on-site renewable energy generation (which can include sources of site related decentralised renewable energy), unless it can be demonstrated that such provision is not feasible. The 20% reduction should be calculated from the regulated CO_2 emissions of the development after all proposed energy efficiency measures and any CO_2 reduction from non-renewable decentralised energy (e.g. CHP) have been incorporated;

> Support and encourage sensitive energy efficiency improvements to existing buildings.

3.16 **Policy CC2:** Adapting to Climate Change – All development should adopt appropriate climate change adaption measures such as:

> Measures to reduce the impact of urban and dwelling overheating, including application of the cooling hierarchy.

> Incorporating biodiverse roofs where appropriate

3.17 The policy also mentions that any development involving 5 or more residential units or 500 sqm or more of any additional floorspace is required to demonstrate the above in a Sustainability Statement. This is proven within this statement.

3.18 The Council will promote and measure sustainable design and construction by:

> Ensuring development schemes demonstrate how adaptation measures and sustainable development principles have been incorporated into the design and proposed implementation.

> Expecting non-domestic developments of 500 sqm of floorspace of above to achieve 'Excellent' in BREEAM assessments and encouraging zero carbon in new development from 2019.

3.19 **Policy CC5 Waste:** The council will seek to make Camden a low waste borough. this will be achieved by:

> Increase recycling and the reuse of materials to meet the London Plan targets of 50% of household waste recycled/composted by 2020 and aspiring to achieve 60% by 2031.

> Making sure that developments include facilities for the storage and collection of waste and recycling.

Summary of Targets

3.20 The development is subject the following targets:

> Hierarchy of *Be Lean*, *Be Clean*, *Be Green* to be followed to achieve compliance with the Part L (2021) baseline. This approach is in line with the requirements of Policy CC1 and will help in developing a strategy to reduce carbon dioxide emissions through the steps in the energy hierarchy;

> As this is a minor development there is no specific CO_2 reduction requirements over and above compliance with Building Regulations Part L (2021).

4. BREEAM STRATEGY

4.1 In accordance with the original S106 (Clause 2.35) and Policy CC2 of Camden Local Plan, the building was previously assessed under the BREEAM 2014 Methodology. The existing completed building has been registered and certified under BREEAM New Construction 2014 (BREEAM-0078-8448) and achieved as built certification in July 2020.

4.2 As the new extension to the 1st floor does not exceed 500m² BREEAM would not apply and meeting policy CC2 of the Local Plan is not applicable.

4.3 However, given that the extension to the 1st floor will be built in accordance with the rest of the building, it is expected that the BREEAM strategy followed previously will be implemented here.

5. ENERGY STRATEGY

Methodology

5.1 This statement first establishes a baseline assessment of the energy demands and associated CO_2 emissions for the proposed 1st floor extension based on the Part L (2021) Building Regulations baseline case.

5.2 The report will then follow the London Plan Energy Hierarchy approach of *Be Lean*, *Be Clean* and *Be Green* to enable appropriate reductions in Regulated CO_2 emissions over the calculated baseline.

5.3 The estimated annual CO_2 emissions have been calculated using Simplified Building Energy Model (SBEM 2021) methodology.

Building Regulations Baseline

5.4 Table 2 below shows the Regulated baseline CO_2 emissions per year. The supporting BRUKL document for the baseline case is shown in Appendices A.

Table 2: Part L (2021) Baseline Emissions

Building Regulations Baseline Part L (2021) - Regulated CO_2	
Baseline CO_2 emissions	**Regulated CO_2 (kg/year)**
	315

6. *BE LEAN*: ENERGY EFFICIENCY MEASURES

6.1 The first stage of the London Plan Energy Hierarchy is demand reduction through energy efficiency measures. Number of measures are proposed in order to reduce energy demands across the development.

6.2 This section outlines the currently proposed strategies for achieving these targets. These measures, or alternatives, can be provided to achieve the policy requirements.

Building Envelope

6.3 This development will incorporate enhanced insulation in the building envelope (walls, roofs, floors, and windows) to achieve average U-values better than those required by Part L 2021 of the Building Regulations. These are to are likely to include the following, although exact values will be confirmed during detailed design stage:

> High Performance double Glazing with a U-value of 1.20 W/m^{2}K (G-value of 0.50 and light transmittance of 0.74).

> Solid door U-value of 1.60 W/m^{2}K;

> External wall U-value of 0.22 W/m^{2}K;

> Flat roof U-value of 0.10 W/m^{2}K.

Air Tightness and Ventilation

6.4 Intermittent extract fans are expected to be specified for the wet rooms such as shower rooms and WCs. Extract fans will achieve a specific fan power of 0.3W/l/s, or lower as specified in the Non-Domestic Building Services Compliance Guide.

6.5 The proposed development is expected to achieve an air permeability of 4m^3/hr.m^2 or less, thus further reducing space heating demands.

Space Heating

6.6 Space heating will be provided by connection to the boiler plant room.

6.7 Low heat loss storage cylinders will be specified to cover the required hot water demand.

Lighting

6.8 Energy efficient LED light fittings are to be installed for all areas. Lighting in all areas is expected to exceed 95 lamp lumens per circuit-watt with light output ratio of 1. The light output ratio is the percentage of light emitted from the light source.

6.9 Appropriate demand reducing light controls are to be installed. This will be achieved through the use of occupancy sensors in the WCs and corridor areas.

Metering & Control

6.10 The buildings power factor correction is expected to greater than 0.95.

6.11 Lighting, heating, hot water and cooling will be separately sub-metered with provision for alarm out of range.

7. *BE CLEAN*: DECENTRALISED ENERGY

7.1 In line with the London Plan Policy SI3 Energy Infrastructure, the heat source for the onsite communal heat network has been considered.

7.2 As this is a minor development this stage of the London Plan Energy Hierarchy approach has been considered but not explored in detail.

7.3 The 1st floor extension will connect to the central boiler plant room with boiler efficiency of 95%.

8. BE GREEN – RENEWABLE ENERGY

8.1 The third part of the London Plan Energy Hierarchy is Be Green which examines the feasibility of renewable energy technologies.

8.2 As this is a minor development this stage of the London Plan Energy Hierarchy approach has been considered but not explored in detail.

8.3 PV has been allowed for in the energy strategy as a renewable energy technology that will help aid further reduction in CO_2 emissions over the Part L (2021) Building Regulations baseline case.

Photovoltaics (PV)

8.4 PV panels generate electricity from solar radiation. The generating potential of PV panels is not dependent on development demand, but only on available roof space for installation and ensuring that they are not over shaded. PV panels have the potential to offset a considerable amount of CO_2 emissions they represent a suitable measure for generating renewable energy.

8.5 A total PV output of 9.45 kWp has been allowed for in the energy strategy and it is expected that the PV will be installed on the appropriate roof space on the development.

9. RESULTS

9.1 Table 3 below shows a further 37% reduction in regulated CO_2 emissions following the inclusion of all the above measures. This result also bettering the requirement of 20% reduction in carbon dioxide emissions from on-site renewable energy generation as per Policy CC1.

Table 3: Reduction in Regulated CO_2 emissions following *all on-site* measures.

	Regulated CO_2 Emissions (kg/yr)	Savings in Regulated CO_2 Emissions (kg/yr)	Reduction in Regulated CO_2 Emissions Achieved (%)
Baseline	315	-	-
After Be Green Measures	198	117	**37.1%**

9.2 The supporting BRUKL for the proposed development is shown in Appendix B.

10. SUMMARY

10.1 The purpose of this Energy Statement and Sustainability strategy is to demonstrate that the proposed 1st floor extension at the consented development in the London Borough of Camden is considered sustainable, as measured against relevant local, regional and national planning policies. The Energy Strategy has been formulated following the London Plan Energy Hierarchy: ***Be Lean***, ***Be Clean*** and ***Be Green***.

10.2 Table 4 below summarises the Regulated CO_2 emissions for the development after on- site measures have been applied.

10.3 A 37% reduction over the Part L (2021) baseline case is predicted which achieves the 20% requirement from on-site renewable energy generation as per Policy CC1 of the London Plan.

Table 4: Summary of Reduction in Regulated CO_2 Emissions

	Regulated CO_2 Emissions (kg/yr)	Savings in Regulated CO_2 Emissions (kg/yr)	Reduction in Regulated CO_2 Emissions Achieved (%)
Baseline	315	-	-
After Be Green Measures	198	117	**37.1%**

10.4 As mentioned above BREEAM is not applicable within the building as it does not exceed 500m^2 and therefore does not need to comply with Policy CC2 of the London Plan.

APPENDICES

Appendix A - BRUKL Worksheets - Baseline

Appendix B - BRUKL Worksheets – Proposed Development

Appendix A

BRUKL Worksheets – Baseline

BRUKL Output Document

HM Government

Compliance with England Building Regulations Part L 2021

Project name

65-69 Holmes Road 1st Floor

As designed

Date: Fri Dec 15 09:30:19 2023

Administrative information

Building Details

Address: 65-69 Holmes Road, London, NW5 3AU

Certification tool

Calculation engine: SBEM

Calculation engine version: v6.1.e.0

Interface to calculation engine: DesignBuilder SBEM

Interface to calculation engine version: v7.2.0

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

Certifier details

Name: Daniel Berkow

Telephone number: 020 3603 1629

Address: Trinity Court Batchworth Island Church Street
Rickmansworth, London, WD3 1RT

Foundation area [m²]: 172.01

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	1.83	
Building CO_2 emission rate (BER), $kgCO_2/m^2$.annum	6.45	
Target primary energy rate (TPER), kWh_{PE}/m^2.annum	0	
Building primary energy rate (BPER), kWh_{PE}/m^2.annum	39.44	
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	0.22	0.22	001 First floor extension 8 Units - Bedrooms_W_9
Floors	0.18	-	-	No heat loss floors
Pitched roofs	0.16	-	-	No heat loss pitched roofs
Flat roofs	0.18	0.1	0.1	001 First floor extension 8 Units - Bedrooms_R_4
Windows** and roof windows	1.6	1.2	1.2	001 First floor extension 8 Units - Bedrooms_G_10
Rooflights***	2.2	-	-	No external rooflights
Personnel doors^	1.6	-	-	No external personnel doors
Vehicle access & similar large doors	1.3	-	-	No external vehicle access doors
High usage entrance doors	3	-	-	No external high usage entrance doors

$U_{a\text{-}Limit}$ = 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
$m^3/(h.m^2)$ at 50 Pa	8	4

Building services

For details on the standard values listed below, system-specific guidance, and additional regulatory requirements, refer to the Approved Documents.

Whole building lighting automatic monitoring & targeting with alarms for out-of-range values	YES
Whole building electric power factor achieved by power factor correction	>0.95

1- Boiler heat network

	Heating efficiency	Cooling efficiency	Radiant efficiency	SFP [W/(l/s)]	HR efficiency
This system	0.95	-	-	-	-
Standard value	0.93*	N/A	N/A	N/A	N/A
Automatic monitoring & targeting with alarms for out-of-range values for this HVAC system					YES

* Standard shown is for gas single boiler systems <=2 MW output and overall for multi-boiler systems. For single boiler systems >2 MW or any individual boiler in a multi-boiler system, limiting efficiency is 0.88.

1- Project DHW

	Water heating efficiency	Storage loss factor [kWh/litre per day]
This building	Hot water provided by HVAC system	0.004
Standard value	N/A	N/A

Zone-level mechanical ventilation, exhaust, and terminal units

ID	System type in the Approved Documents
A	Local supply or extract ventilation units
B	Zonal supply system where the fan is remote from the zone
C	Zonal extract system where the fan is remote from the zone
D	Zonal balanced supply and extract ventilation system
E	Local balanced supply and extract ventilation units
F	Other local ventilation units
G	Fan assisted terminal variable air volume units
H	Fan coil units
I	Kitchen extract with the fan remote from the zone and a grease filter

NB: Limiting SFP may be increased by the amounts specified in the Approved Documents if the installation includes particular components.

Zone name	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
001 First floor extension 8 Units - WC_Bathroom 1	-	-	-	-	-	-	-	-	-	-	N/A
001 First floor extension 8 Units - WC_Bathroom 2	-	-	-	-	-	-	-	-	-	-	N/A
001 First floor extension 8 Units - WC_Bathroom 5	-	-	-	-	-	-	-	-	-	-	N/A

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
001 First floor extension 8 Units - Bedrooms	95	-	-
001 First floor extension 8 Units - Circulation	95	-	-
001 First floor extension 8 Units - WC_Bathroom 1	95	-	-
001 First floor extension 8 Units - WC_Bathroom 2	95	-	-
001 First floor extension 8 Units - WC_Bathroom 5	95	-	-

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?
001 First floor extension 8 Units - Bedrooms	NO (-62.8%)	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]	172	172
External area [m^2]	139.2	139.2
Weather	LON	LON
Infiltration [m^3/hm^2@ 50Pa]	4	3
Average conductance [W/K]	40.28	73.77
Average U-value [W/m^2K]	0.29	0.53
Alpha value* [%]	45.72	32.52

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

Building Use

% Area	Building Type
	Retail/Financial and Professional Services
	Restaurants and Cafes/Drinking Establishments/Takeaways
	Offices and Workshop Businesses
	General Industrial and Special Industrial Groups
	Storage or Distribution
	Hotels
	Residential Institutions: Hospitals and Care Homes
100	**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	20.5	22.17
Cooling	0	0
Auxiliary	3.65	3.15
Lighting	2.87	3.11
Hot water	5.94	4.48
Equipment*	7.97	7.97
TOTAL**	**32.97**	**32.91**

* 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	33.38
Wind turbines	0	0
CHP generators	0	0
Solar thermal systems	0	0
Displaced electricity	*0*	*33.38*

Energy & CO_2 Emissions Summary

	Actual	Notional
Heating + cooling demand [MJ/m^2]	90.84	106.35
Primary energy [kWh_{PE}/m^2]	39.44	-8.27
Total emissions [kg/m^2]	6.45	1.83

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] Central heating using water: radiators, [HS] LTHW boiler, [HFT] Natural Gas, [CFT] Natural Gas										
	Actual	65.8	25	20.5	0	3.7	0.89	0	0.95	0
	Notional	68.6	37.7	22.2	0	3.2	0.86	0	----	----

Key to terms

Heat dem [MJ/m2] = Heating energy demand
Cool dem [MJ/m2] = Cooling energy demand
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ST = System type
HS = Heat source
HFT = Heating fuel type
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Appendix B

BRUKL Worksheets – *Proposed Development*

BRUKL Output Document

HM Government

Compliance with England Building Regulations Part L 2021

Project name

65-69 Holmes Road 1st Floor

As designed

Date: Fri Dec 15 11:03:14 2023

Administrative information

Building Details

Address: 65-69 Holmes Road, London, NW5 3AU

Certifier details

Name: Daniel Berkow

Telephone number: 020 3603 1629

Address: Trinity Court Batchworth Island Church Street
Rickmansworth, London, WD3 1RT

Certification tool

Calculation engine: SBEM

Calculation engine version: v6.1.e.0

Interface to calculation engine: DesignBuilder SBEM

Interface to calculation engine version: v7.2.0

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

Foundation area [m²]: 172.01

The CO_2 emission and primary energy rates of the building must not exceed the targets

Target CO_2 emission rate (TER), $kgCO_2/m^2$.annum	1.83	
Building CO_2 emission rate (BER), $kgCO_2/m^2$.annum	1.15	
Target primary energy rate (TPER), kWh_{PE}/m^2.annum	0	
Building primary energy rate (BPER), kWh_{PE}/m^2.annum	-22.21	
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	0.22	0.22	001 First floor extension 8 Units - Bedrooms_W_9
Floors	0.18	-	-	No heat loss floors
Pitched roofs	0.16	-	-	No heat loss pitched roofs
Flat roofs	0.18	0.1	0.1	001 First floor extension 8 Units - Bedrooms_R_4
Windows** and roof windows	1.6	1.2	1.2	001 First floor extension 8 Units - Bedrooms_G_10
Rooflights***	2.2	-	-	No external rooflights
Personnel doors^	1.6	-	-	No external personnel doors
Vehicle access & similar large doors	1.3	-	-	No external vehicle access doors
High usage entrance doors	3	-	-	No external high usage entrance doors

$U_{a\text{-}Limit}$ = 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
$m^3/(h.m^2)$ at 50 Pa	8	4

Building services

For details on the standard values listed below, system-specific guidance, and additional regulatory requirements, refer to the Approved Documents.

Whole building lighting automatic monitoring & targeting with alarms for out-of-range values	YES
Whole building electric power factor achieved by power factor correction	>0.95

1- Boiler heat network

	Heating efficiency	Cooling efficiency	Radiant efficiency	SFP [W/(l/s)]	HR efficiency
This system	0.95	-	-	-	-
Standard value	0.93*	N/A	N/A	N/A	N/A
Automatic monitoring & targeting with alarms for out-of-range values for this HVAC system					YES

* Standard shown is for gas single boiler systems <=2 MW output and overall for multi-boiler systems. For single boiler systems >2 MW or any individual boiler in a multi-boiler system, limiting efficiency is 0.88.

1- Project DHW

	Water heating efficiency	Storage loss factor [kWh/litre per day]
This building	Hot water provided by HVAC system	0.004
Standard value	N/A	N/A

Zone-level mechanical ventilation, exhaust, and terminal units

ID	System type in the Approved Documents
A	Local supply or extract ventilation units
B	Zonal supply system where the fan is remote from the zone
C	Zonal extract system where the fan is remote from the zone
D	Zonal balanced supply and extract ventilation system
E	Local balanced supply and extract ventilation units
F	Other local ventilation units
G	Fan assisted terminal variable air volume units
H	Fan coil units
I	Kitchen extract with the fan remote from the zone and a grease filter

NB: Limiting SFP may be increased by the amounts specified in the Approved Documents if the installation includes particular components.

Zone name	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
001 First floor extension 8 Units - WC_Bathroom 1	-	-	-	-	-	-	-	-	-	-	N/A
001 First floor extension 8 Units - WC_Bathroom 2	-	-	-	-	-	-	-	-	-	-	N/A
001 First floor extension 8 Units - WC_Bathroom 5	-	-	-	-	-	-	-	-	-	-	N/A

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
001 First floor extension 8 Units - Bedrooms	95	-	-
001 First floor extension 8 Units - Circulation	95	-	-
001 First floor extension 8 Units - WC_Bathroom 1	95	-	-
001 First floor extension 8 Units - WC_Bathroom 2	95	-	-
001 First floor extension 8 Units - WC_Bathroom 5	95	-	-

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?
001 First floor extension 8 Units - Bedrooms	NO (-62.8%)	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]	172	172
External area [m^2]	139.2	139.2
Weather	LON	LON
Infiltration [m^3/hm^2@ 50Pa]	4	3
Average conductance [W/K]	40.28	73.77
Average U-value [W/m^2K]	0.29	0.53
Alpha value* [%]	45.72	32.52

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

Building Use

% Area	Building Type
	Retail/Financial and Professional Services
	Restaurants and Cafes/Drinking Establishments/Takeaways
	Offices and Workshop Businesses
	General Industrial and Special Industrial Groups
	Storage or Distribution
	Hotels
	Residential Institutions: Hospitals and Care Homes
100	**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	20.5	22.17
Cooling	0	0
Auxiliary	3.65	3.15
Lighting	2.87	3.11
Hot water	5.94	4.48
Equipment*	7.97	7.97
TOTAL**	**32.97**	**32.91**

* 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	42.2	33.38
Wind turbines	0	0
CHP generators	0	0
Solar thermal systems	0	0
Displaced electricity	*42.2*	*33.38*

Energy & CO_2 Emissions Summary

	Actual	Notional
Heating + cooling demand [MJ/m^2]	90.84	106.35
Primary energy [kWh_{PE}/m^2]	-22.21	-8.27
Total emissions [kg/m^2]	1.15	1.83

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] Central heating using water: radiators, [HS] LTHW boiler, [HFT] Natural Gas, [CFT] Natural Gas										
	Actual	65.8	25	20.5	0	3.7	0.89	0	0.95	0
	Notional	68.6	37.7	22.2	0	3.2	0.86	0	----	----

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