AERMEC

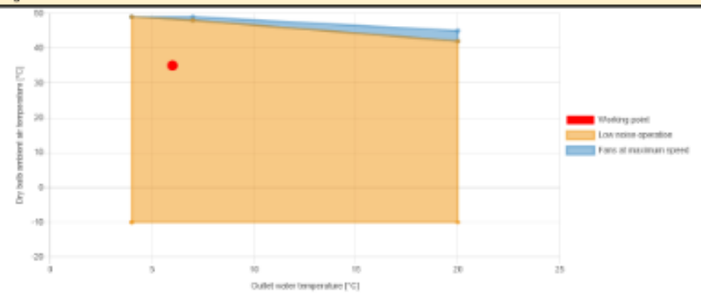
NPG3000E4*J*DHSH

ηsc	12 / 7 °C	%	181.33
SEER	12 / 7 °C	W/W	4.61
ηsc	23 / 18 °C	%	197.68
SEER	23 / 18 °C	W/W	5.02
Pdesignh	55 °C	kW	710.94
ηs	55 °C	%	130.96
SCOP	55 °C	W/W	3.35
Pdesignh	35 °C	kW	719.87
ηs	35 °C	%	152.14
SCOP	35 °C	W/W	3.88

Calculation of energy application is performed in accordance with EN 14825:2018
SEER (12 / 7 °C): fixed water flow rate, suitable outlet water temperature.
SEER (23 / 18 °C): fixed water flow rate.
SEPR (12 / 7 °C): fixed water flow rate.
Average climatic conditions

Working field

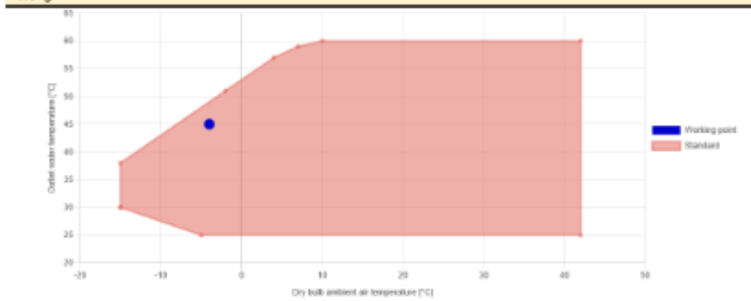
Cooling



AERMEC

NPG3000E4*J*DHSH

Heating

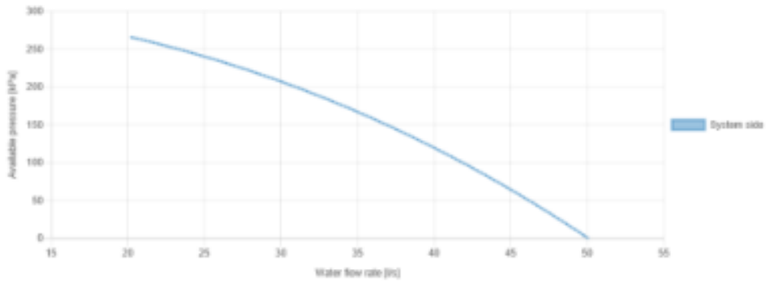


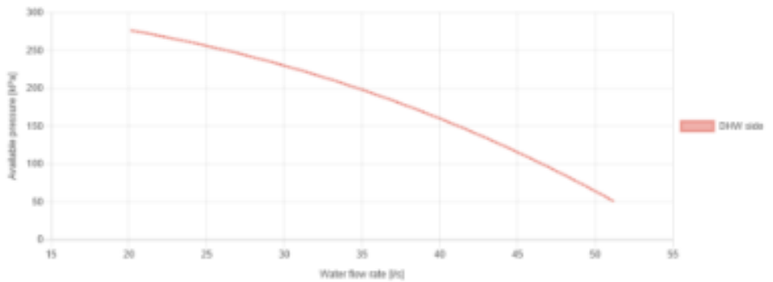
General data

Refrigerant circuit data			
Refrigerant			R32
Driver			On-Off
Compressor type			Scroll
Number of compressors		n.	9
Number of cooling circuits		n.	3
Refrigerant gas charge	C1	kg	67.55
	C2	kg	67.55
	C3	kg	44
Oil charge	C1	l	23.04
	C2	l	23.04
	C3	l	23
Fan group data			
Driver			Inverter modulation
Fan type			Axial
Number of fans		n.	20
Air flow rate		m³/s	94.1558
Water circuit data			
Exchanger type			Plate
Number of exchangers		n.	2
Connections type			Grooved joints
Water connections	inlet	Ø	5"
	outlet	Ø	5"

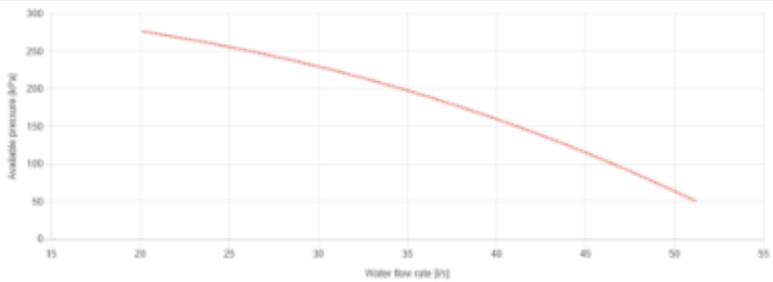
AERMEC

NPG3000E4*J*DHSH





Water circuit data (recovery side)			
Exchanger type			Plate
Number of exchangers		n.	3
Connections type			Grooved joints
Water connections	inlet	Ø	5"
	outlet	Ø	5"

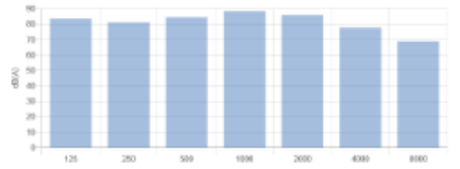


AERMEC

NPG3000E4*J*DHSH

Sound data (nominal cooling data)		
Sound power - Lw	dB(A)	92.6
Sound pressure at 10 m	dB(A)	59.5

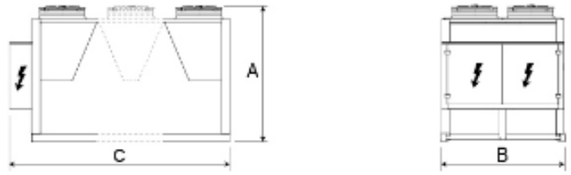
Hz	Lw [dB]	Lw [dB(A)]
125	99.6	83.5
250	89.7	81.1
500	87.6	84.4
1000	88.5	88.5
2000	84.8	86.0
4000	76.8	77.8
8000	70.1	69.0



The sound levels are given at full load, without pumps (if available) and at nominal conditions (air temperature 35 °C, water temperature (inlet) 12/07 °C).
Sound power calculated on the basis of measurements carried out in accordance with the UNI EN ISO 9614-2 regulation, in compliance with the requirements of the Eurovent certification. Sound pressure calculated according to correlation in accordance with UNI EN ISO 3744.

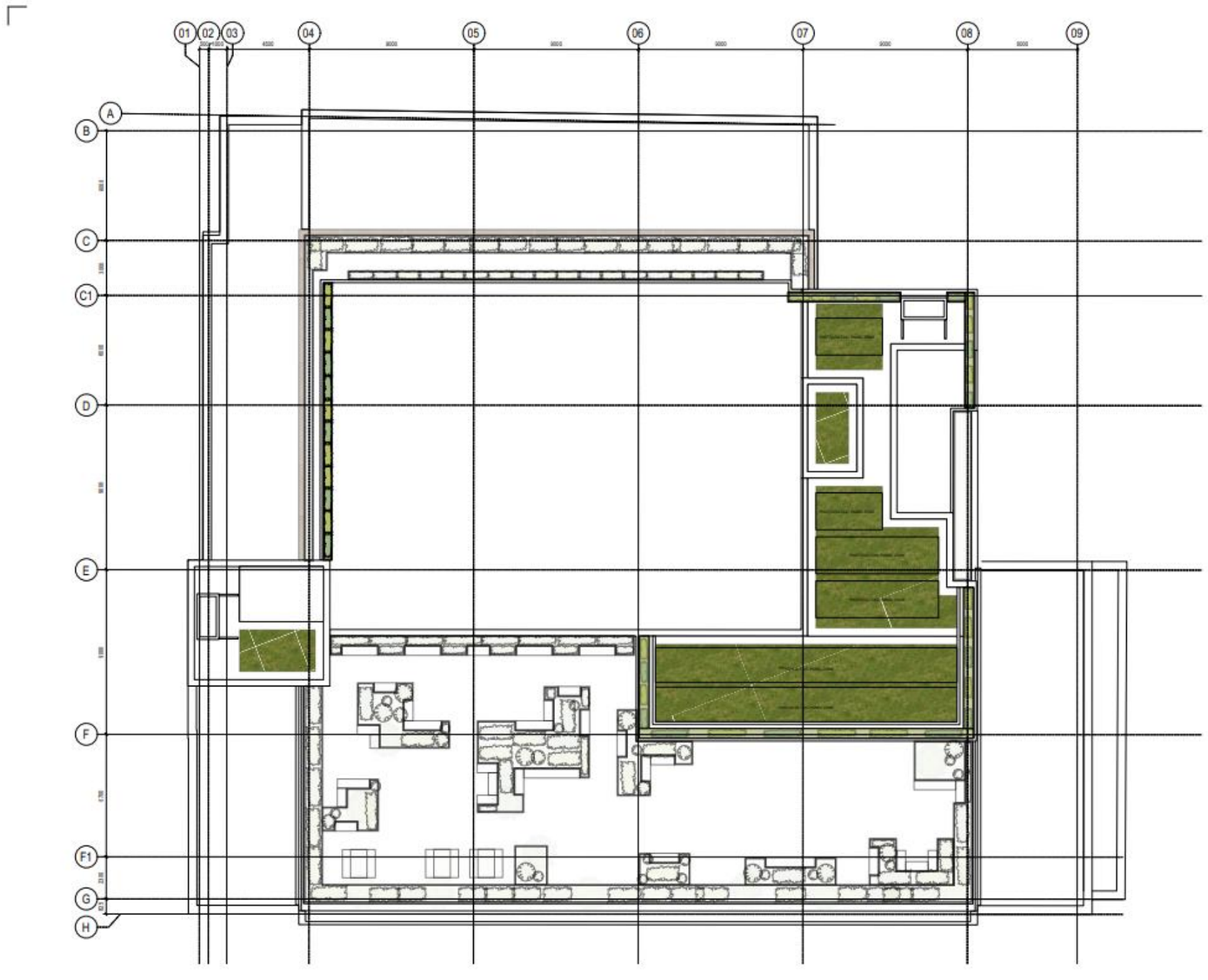
Electric data		
Full Load Amps (FLA)	A	710.7
Locked Rotor Amps (LRA)	A	1.173.0
Power supply		400V/3/50Hz with circuit breakers

Dimensions and weights		
A - Height	m	2.45
B - Width	m	2.2
C - Length	m	13.53
Empty weight	kg	10.659
Shipping weight	kg	10.659



Appendix C: Solar photovoltaic layout.

Initial indication of rooftop solar PV provision shown below. Full coordinated PV layout to be produced as design develops.



1 Roof Proposed Plan
Scale: 1:100

Stiff + Trevillion
Stiff + Trevillion Architects Ltd
16 Woodfield Road
London W9 2BA

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mail@stiffandtrevillion.com
www.stiffandtrevillion.com

Client
RAILPEN

Project
26 RED LION SQUARE
LONDON WC1R 4HQ

Drawing Title
Roof Proposed Plan

Drawing Status	Drawn	Checked	Reviewer
DRAFT	RL	RB	A

Project No.	Date	Scale @ A1	Scale @ A3
4575	24/10/2022	1:100	1:200

Drawing Number
4575-ST-PR-02-108

Appendix D: BRUKLS

Contents
D.1 Refurbishment Baseline

BRUKL Output Document

HM Government

Compliance with England Building Regulations Part L 2021

Project name

26 Red Lion Sq _ Baseline_v1 As designed

Date: Mon Nov 25 14:51:48 2024

Administrative information

Building Details
Address: Address 1, City, Postcode

Certifier details
Name: Giorgio Beghi
Telephone number:
Address: 12-13 Stable Street, London, N1C 4AB

Certification tool
Calculation engine: Apache
Calculation engine version: 7.0.25
Interface to calculation engine: IES Virtual Environment
Interface to calculation engine version: 7.0.25
BRUKL compliance module version: v6.1.e.1

Foundation area [m²]: 1298.5

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	3.54	
Building CO_2 emission rate (BER), $kgCO_2/m^2$annum	6.02	
Target primary energy rate (TPER), kWh_{PE}/m^2annum	38.99	
Building primary energy rate (BPER), kWh_{PE}/m^2annum	65.11	
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	$U_{e\text{-}Limit}$	$U_{e\text{-}Calc}$	$U_{i\text{-}Calc}$	First surface with maximum value
Walls*	0.26	0.54	0.55	L0000024:Surf[0]
Floors	0.18	0.25	0.25	BS000004:Surf[2]
Pitched roofs	0.16	-	-	No pitched roofs in building
Flat roofs	0.18	0.18	0.18	L0000096:Surf[7]
Windows** and roof windows	1.6	1.4	1.4	L000002A:Surf[3]
Rooflights***	2.2	-	-	No roof lights in building
Personnel doors^	1.6	1.6	1.6	L000001D:Surf[0]
Vehicle access & similar large doors	1.3	-	-	No vehicle access doors in building
High usage entrance doors	3	1.4	1.4	L0000096:Surf[10]

$U_{e\text{-}Limit}$ = Limiting area-weighted average U-values [W/(m²K)] $U_{i\text{-}Calc}$ = Calculated maximum individual element U-values [W/(m²K)]
$U_{e\text{-}Calc}$ = 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	25

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Technical Data Sheet (Actual vs. Notional Building)

Building Global Parameters

	Actual	Notional
Floor area [m²]	13629.5	13629.5
External area [m²]	9786.1	9786.1
Weather	LON	LON
Infiltration [m^3/hm^2@ 50Pa]	25	3
Average conductance [W/K]	5048.15	3825.07
Average U-value [W/m^2K]	0.52	0.39
Alpha value* [%]	25	10

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

Building Use

% Area	Building Type
4	**Retail/Financial and Professional Services**
	Restaurants and Cafes/Drinking Establishments/Takeaways
96	**Offices and Workshop Businesses**
	General Industrial and Special Industrial Groups
	Storage or Distribution
	Hotels
	Residential Institutions: Hospitals and Care Homes
	Residential Institutions: Residential Schools
	Residential Institutions: Universities and Colleges
	Secure Residential Institutions
	Residential Spaces
	Non-residential Institutions: Community/Day Centre
	Non-residential Institutions: Libraries, Museums, and Galleries
	Non-residential Institutions: Education
	Non-residential Institutions: Primary Health Care Building
	Non-residential Institutions: Crown and County Courts
	General Assembly and Leisure, Night Clubs, and Theatres
	Others: Passenger Terminals
	Others: Emergency Services
	Others: Miscellaneous 24hr Activities
	Others: Car Parks 24 hrs
	Others: Stand Alone Utility Block

Energy Consumption by End Use [kWh/m^2]

	Actual	Notional
Heating	8.16	0.8
Cooling	2.2	4.33
Auxiliary	9.5	7.14
Lighting	14.53	11.03
Hot water	9.55	3.26
Equipment*	40.66	40.66
TOTAL**	**43.94**	**26.56**

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

Energy & CO_2 Emissions Summary

	Actual	Notional
Heating + cooling demand [MJ/m^2]	109.42	80.2
Primary energy [kWh_{PE}/m^2]	65.11	38.99
Total emissions [kg/m^2]	6.02	3.54

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D.2 Refurbishment Be Lean/Be Clean

BRUKL Output Document

HM Government

Compliance with England Building Regulations Part L 2021

Project name

26 Red Lion Sq _ BeLean_v1 As designed

Date: Tue Nov 26 19:19:12 2024

Administrative information

Building Details

Address: Address 1, City, Postcode

Certification tool

Calculation engine: Apache
Calculation engine version: 7.0.25
Interface to calculation engine: IES Virtual Environment
Interface to calculation engine version: 7.0.25
BRUKL compliance module version: v6.1.e.1

Certifier details

Name: Giorgio Beghi
Telephone number:
Address: 12-13 Stable Street, London, N1C 4AB

Foundation area [m^2]: 1298.5

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	3.58	
Building CO_2 emission rate (BER), $kgCO_2/m^2$annum	4.19	
Target primary energy rate (TPER), kWh_{PE}/m^2annum	39.44	
Building primary energy rate (BPER), kWh_{PE}/m^2annum	46.14	
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	$U_{b\text{-}Limit}$	$U_{b\text{-}Calc}$	$U_{i\text{-}Calc}$	First surface with maximum value
Walls*	0.26	0.2	0.3	L0000043:Surf[2]
Floors	0.18	0.1	0.1	BS000004:Surf[2]
Pitched roofs	0.16	-	-	No pitched roofs in building
Flat roofs	0.18	0.1	0.1	L0000096:Surf[7]
Windows** and roof windows	1.6	1.5	1.5	L000002A:Surf[3]
Rooflights***	2.2	-	-	No roof lights in building
Personnel doors^	1.6	1.6	1.6	L000001D:Surf[0]
Vehicle access & similar large doors	1.3	-	-	No vehicle access doors in building
High usage entrance doors	3	1.5	1.5	L0000096:Surf[10]

$U_{b\text{-}Limit}$ = Limiting area-weighted average U-values [W/(m^2K)] $U_{i\text{-}Calc}$ = Calculated maximum individual element U-values [W/(m^2K)]
$U_{b\text{-}Calc}$ = Calculated area-weighted average U-values [W/(m^2K)]
* Automatic U-value check by the tool does not apply to curtain walls whose limiting standard is similar to that for windows.
** Display windows and similar glazing are excluded from the U-value check. *** Values for rooflights refer to the horizontal position.
^ For fire doors, limiting U-value is 1.8 W/m^2K
NB: Neither roof ventilators (inc. smoke vents) nor swimming pool basins are modelled or checked against the limiting standards by the tool.

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

Technical Data Sheet (Actual vs. Notional Building)

Building Global Parameters

	Actual	Notional
Floor area [m^2]	13629.5	13629.5
External area [m^2]	9786.1	9786.1
Weather	LON	LON
Infiltration [m^3/hm^2@ 50Pa]	3	3
Average conductance [W/K]	3161.44	3819.1
Average U-value [W/m^2K]	0.32	0.39
Alpha value* [%]	25	10

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

Building Use

% Area	Building Type
4	**Retail/Financial and Professional Services**
	Restaurants and Cafes/Drinking Establishments/Takeaways
96	**Offices and Workshop Businesses**
	General Industrial and Special Industrial Groups
	Storage or Distribution
	Hotels
	Residential Institutions: Hospitals and Care Homes
	Residential Institutions: Residential Schools
	Residential Institutions: Universities and Colleges
	Secure Residential Institutions
	Residential Spaces
	Non-residential Institutions: Community/Day Centre
	Non-residential Institutions: Libraries, Museums, and Galleries
	Non-residential Institutions: Education
	Non-residential Institutions: Primary Health Care Building
	Non-residential Institutions: Crown and County Courts
	General Assembly and Leisure, Night Clubs, and Theatres
	Others: Passenger Terminals
	Others: Emergency Services
	Others: Miscellaneous 24hr Activities
	Others: Car Parks 24 hrs
	Others: Stand Alone Utility Block

Energy Consumption by End Use [kWh/m^2]

	Actual	Notional
Heating	1.01	0.8
Cooling	5.41	4.33
Auxiliary	6.67	7.43
Lighting	8.79	11.03
Hot water	9.55	3.26
Equipment*	40.66	40.66
TOTAL**	**31.45**	**26.86**

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

Energy & CO_2 Emissions Summary

	Actual	Notional
Heating + cooling demand [MJ/m^2]	80.85	80.28
Primary energy [kWh_{PE}/m^2]	46.14	39.44
Total emissions [kg/m^2]	4.19	3.58

D.3 Refurbishment Be Green

BRUKL Output Document

HM Government

Compliance with England Building Regulations Part L 2021

Project name

26 Red Lion Sq _ BeGreen_v1 As designed

Date: Tue Nov 26 21:39:54 2024

Administrative information

Building Details

Address: Address 1, City, Postcode

Certification tool

Calculation engine: Apache
Calculation engine version: 7.0.25
Interface to calculation engine: IES Virtual Environment
Interface to calculation engine version: 7.0.25
BRUKL compliance module version: v6.1.e.1

Certifier details

Name: Giorgio Beghi
Telephone number:
Address: 12-13 Stable Street, London, N1C 4AB

Foundation area [m²]: 1298.5

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	3.82	
Building CO_2 emission rate (BER), $kgCO_2/m^2$.annum	3.43	
Target primary energy rate (TPER), kWh_{PE}/m^2.annum	41.95	
Building primary energy rate (BPER), kWh_{PE}/m^2.annum	37.76	
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	$U_{i\text{-}Limit}$	$U_{i\text{-}Calc}$	$U_{i\text{-}Calc}$	First surface with maximum value
Walls*	0.26	0.2	0.3	L0000043:Surf[2]
Floors	0.18	0.1	0.1	BS000004:Surf[2]
Pitched roofs	0.16	-	-	No pitched roofs in building
Flat roofs	0.18	0.1	0.1	L0000096:Surf[7]
Windows** and roof windows	1.6	1.5	1.5	L000002A:Surf[3]
Rooflights***	2.2	-	-	No roof lights in building
Personnel doors^	1.6	1.6	1.6	L000001D:Surf[0]
Vehicle access & similar large doors	1.3	-	-	No vehicle access doors in building
High usage entrance doors	3	1.5	1.5	L0000096:Surf[10]

$U_{i\text{-}Limit}$ = Limiting area-weighted average U-values [W/(m²K)] $U_{i\text{-}Calc}$ = Calculated maximum individual element U-values [W/(m²K)]
$U_{i\text{-}Calc}$ = 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	3

Technical Data Sheet (Actual vs. Notional Building)

Building Global Parameters

	Actual	Notional
Floor area [m²]	13629.5	13629.5
External area [m²]	9786.1	9786.1
Weather	LON	LON
Infiltration [m^3/hm^2@ 50Pa]	3	3
Average conductance [W/K]	3161.44	3819.1
Average U-value [W/m^2K]	0.32	0.39
Alpha value* [%]	25	10

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

Building Use

% Area	Building Type
4	**Retail/Financial and Professional Services**
	Restaurants and Cafes/Drinking Establishments/Takeaways
96	**Offices and Workshop Businesses**
	General Industrial and Special Industrial Groups
	Storage or Distribution
	Hotels
	Residential Institutions: Hospitals and Care Homes
	Residential Institutions: Residential Schools
	Residential Institutions: Universities and Colleges
	Secure Residential Institutions
	Residential Spaces
	Non-residential Institutions: Community/Day Centre
	Non-residential Institutions: Libraries, Museums, and Galleries
	Non-residential Institutions: Education
	Non-residential Institutions: Primary Health Care Building
	Non-residential Institutions: Crown and County Courts
	General Assembly and Leisure, Night Clubs, and Theatres
	Others: Passenger Terminals
	Others: Emergency Services
	Others: Miscellaneous 24hr Activities
	Others: Car Parks 24 hrs
	Others: Stand Alone Utility Block

Energy Consumption by End Use [kWh/m^2]

	Actual	Notional
Heating	0.83	0.81
Cooling	5.39	4.32
Auxiliary	6.49	7.08
Lighting	8.6	10.91
Hot water	5.74	5.45
Equipment*	40.66	40.66
TOTAL**	**27.05**	**28.56**

* 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	1.28	0
Wind turbines	0	0
CHP generators	0	0
Solar thermal systems	0	0
Displaced electricity	*1.28*	*0*

Energy & CO_2 Emissions Summary

	Actual	Notional
Heating + cooling demand [MJ/m^2]	80.53	80.14
Primary energy [kWh_{PE}/m^2]	37.76	41.95
Total emissions [kg/m^2]	3.43	3.82

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