

Block Compliance



BQ-04-02_Copy_Copy - 00001_Copy_Copy	71.99	4.16	10.63	60.87 %
BQ-04-06_Copy_Copy - 00001_Copy_Copy	85.50	4.33	11.39	61.98 %
BQ-05-01_Copy_Copy - 00001_Copy_Copy	83.42	5.37	12.64	57.52 %
BQ-05-02_Copy_Copy - 00001_Copy_Copy	71.99	4.85	11.95	59.41 %
BQ-05-06_Copy_Copy - 00001_Copy_Copy	85.50	5.39	12.73	57.66 %
Totals:	2015.45	128.81	320.11	
Average DER = 4.74 kgCO ₂ /m ²	% DER/TER	PASS		
Average TER = 11.80 kgCO ₂ /m ²	59.82 %			

Block Compliance Report - DFEE				
Block Reference: Block Q_Be Green 0704		Block Name: Block Q		
Property-Assessment Reference	Floor area (m ²)	DFEE (kWh/m ² /yr)	TFEE (kWh/m ² /yr)	% DFEE/TFEE
BQ-01-03_Copy_Copy - 00001_Copy_Copy	51.00	24.69	23.85	-3.55 %
BQ-01-04_Copy_Copy_Copy - 00001_Copy_Copy_Copy	51.00	38.00	31.02	-22.51 %
BQ-01-05_Copy_Copy - 00001_Copy_Copy	71.65	32.78	27.79	-17.96 %
BQ-02-03_Copy_Copy - 00001_Copy_Copy	81.87	31.71	28.36	-11.80 %
BQ-02-04_Copy_Copy_Copy - 00001_Copy_Copy_Copy	70.20	27.20	24.17	-12.58 %
BQ-02-05_Copy_Copy - 00001_Copy_Copy	71.65	20.50	20.60	0.49 %
BQ-03-03_Copy_Copy - 00001_Copy_Copy	81.67	27.45	25.87	-6.11 %
BQ-03-04_Copy_Copy_Copy - 00001_Copy_Copy_Copy	70.32	25.80	23.87	-8.07 %
BQ-03-05_Copy_Copy - 00001_Copy_Copy	70.80	21.20	21.13	-0.30 %
BQ-04-03_Copy_Copy - 00001_Copy_Copy	81.67	27.45	25.87	-6.11 %
BQ-04-04_Copy_Copy_Copy - 00001_Copy_Copy_Copy	70.32	25.80	23.87	-8.07 %
BQ-04-05_Copy_Copy - 00001_Copy_Copy	70.80	21.20	21.13	-0.30 %
BQ-05-03_Copy_Copy - 00001_Copy_Copy	81.67	39.29	31.61	-24.31 %
BQ-05-04_Copy_Copy_Copy - 00001_Copy_Copy_Copy	70.32	37.76	29.67	-27.27 %

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BQ-05-05_Copy_Copy - 00001_Copy_Copy	70.80	33.42	27.14	-23.12 %
BQ-02-01_Copy_Copy - 00001_Copy_Copy	83.00	40.41	34.25	-17.98 %
BQ-02-02_Copy_Copy - 00001_Copy_Copy	59.00	29.78	27.53	-8.18 %
BQ-02-06_Copy_Copy - 00001_Copy_Copy	84.98	29.42	28.20	-4.32 %
BQ-03-01_Copy_Copy - 00001_Copy_Copy	83.42	28.40	27.33	-3.89 %
BQ-03-02_Copy_Copy - 00001_Copy_Copy	71.99	18.17	19.78	8.13 %
BQ-03-06_Copy_Copy - 00001_Copy_Copy	85.50	29.22	28.05	-4.20 %
BQ-04-01_Copy_Copy - 00001_Copy_Copy	83.42	28.40	27.33	-3.89 %
BQ-04-02_Copy_Copy - 00001_Copy_Copy	71.99	18.17	19.78	8.13 %
BQ-04-06_Copy_Copy - 00001_Copy_Copy	85.50	29.22	28.05	-4.20 %
BQ-05-01_Copy_Copy - 00001_Copy_Copy	83.42	40.42	33.26	-21.54 %
BQ-05-02_Copy_Copy - 00001_Copy_Copy	71.99	29.79	25.92	-14.91 %
BQ-05-06_Copy_Copy - 00001_Copy_Copy	85.50	41.41	34.10	-21.45 %
Totals:	2015.45	797.05	719.51	
Average DFEE = 29.71 kgCO ₂ /m ²	% DFEE/TFEE	FAIL		
Average TFEE = 26.83 kgCO ₂ /m ²	-10.75 %			

Block Compliance Report - DPER				
Block Reference: Block Q_Be Green 0704		Block Name: Block Q		
Property-Assessment Reference	Floor area (m ²)	DPER (kWh/m ² /yr)	TPER (kWh/m ² /yr)	% DPER/TPER
BQ-01-03_Copy_Copy - 00001_Copy_Copy	51.00	57.50	72.03	20.17 %
BQ-01-04_Copy_Copy_Copy - 00001_Copy_Copy_Copy	51.00	67.29	79.63	15.50 %
BQ-01-05_Copy_Copy - 00001_Copy_Copy	71.65	53.73	66.26	18.91 %
BQ-02-03_Copy_Copy - 00001_Copy_Copy	81.87	49.40	62.12	20.48 %
BQ-02-04_Copy_Copy_Copy - 00001_Copy_Copy_Copy	70.20	49.74	61.79	19.50 %
BQ-02-05_Copy_Copy - 00001_Copy_Copy	71.65	45.42	57.94	21.61 %
BQ-03-03_Copy_Copy - 00001_Copy_Copy	81.67	46.17	59.19	22.00 %

Block Compliance



BQ-03-04_Copy_Copy_Copy - 00001_Copy_Copy_Copy	70.32	48.65	61.47	20.86 %
BQ-03-05_Copy_Copy - 00001_Copy_Copy	70.80	45.87	58.62	21.75 %
BQ-04-03_Copy_Copy - 00001_Copy_Copy	81.67	46.17	59.19	22.00 %
BQ-04-04_Copy_Copy_Copy - 00001_Copy_Copy_Copy	70.32	48.65	61.47	20.86 %
BQ-04-05_Copy_Copy - 00001_Copy_Copy	70.80	45.87	58.62	21.75 %
BQ-05-03_Copy_Copy - 00001_Copy_Copy	81.67	56.25	66.02	14.80 %
BQ-05-04_Copy_Copy_Copy - 00001_Copy_Copy_Copy	70.32	58.24	68.25	14.67 %
BQ-05-05_Copy_Copy - 00001_Copy_Copy	70.80	54.38	65.59	17.09 %
BQ-02-01_Copy_Copy - 00001_Copy_Copy	83.00	56.82	68.97	17.62 %
BQ-02-02_Copy_Copy - 00001_Copy_Copy	59.00	56.41	70.19	19.63 %
BQ-02-06_Copy_Copy - 00001_Copy_Copy	84.98	46.37	61.14	24.16 %
BQ-03-01_Copy_Copy - 00001_Copy_Copy	83.42	46.18	60.48	23.64 %
BQ-03-02_Copy_Copy - 00001_Copy_Copy	71.99	44.76	57.12	21.64 %
BQ-03-06_Copy_Copy - 00001_Copy_Copy	85.50	46.09	60.82	24.22 %
BQ-04-01_Copy_Copy - 00001_Copy_Copy	83.42	46.18	60.48	23.64 %
BQ-04-02_Copy_Copy - 00001_Copy_Copy	71.99	44.76	57.12	21.64 %
BQ-04-06_Copy_Copy - 00001_Copy_Copy	85.50	46.09	60.82	24.22 %
BQ-05-01_Copy_Copy - 00001_Copy_Copy	83.42	56.67	67.55	16.11 %
BQ-05-02_Copy_Copy - 00001_Copy_Copy	71.99	51.70	64.20	19.47 %
BQ-05-06_Copy_Copy - 00001_Copy_Copy	85.50	56.89	68.04	16.39 %
Totals:	2015.45	1372.25	1715.12	
Average DPER = 50.49 kgCO ₂ /m ²	% DPER/TPER	PASS		
Average TPER = 63.19 kgCO ₂ /m ²	20.10 %			

APPENDIX C Non-Residential Commercial BRUKLs-Be Lean

12.25 Block ABC

BRUKL Output Document

 HM Government

Compliance with England Building Regulations Part L 2021

Project name

ABC Be Lean Commercial

As designed

Date: Wed Nov 27 16:19:57 2024

Administrative information

Building Details

Address: Address 1, Address 2, City, Postcode

Certification tool

Calculation engine: SBEM

Calculation engine version: v6.1.e.1

Interface to calculation engine: Virtual Environment

Interface to calculation engine version: v7.0.26

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

Certifier details

Name: ME Engineers

Telephone number: Phone

Address: Street Address, City, Postcode

Foundation area [m²]: 1269.97

The CO₂ emission and primary energy rates of the building must not exceed the targets

Target CO ₂ emission rate (TER), kgCO ₂ /m ² :annum	5.42
Building CO ₂ emission rate (BER), kgCO ₂ /m ² :annum	4.4
Target primary energy rate (TPER), kWh _e /m ² :annum	58.97
Building primary energy rate (BPER), kWh _e /m ² :annum	47.39
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	0.15	0.15	00000000_W-1
Floors	0.18	0.11	0.11	00000000_F
Pitched roofs	0.16	-	-	No heat loss pitched roofs
Flat roofs	0.18	0.11	0.11	00000000_C
Windows** and roof windows	1.6	1.3	1.3	00000000_W-1_O0
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-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	3

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- VRF - Be Lean

	Heating efficiency	Cooling efficiency	Radiant efficiency	SFP [W/(l/s)]	HR efficiency
This system	2.64	6	-	1.5	0.8
Standard value	2.5*	5	N/A	2^	N/A
Automatic monitoring & targeting with alarms for out-of-range values for this HVAC system					YES
* Standard shown is for all types >12 kW output, except absorption and gas engine heat pumps.					
^ Limiting SFP may be increased by the amounts specified in the Approved Documents if the installation includes particular components.					

1- SYST0005-DHW

	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
A-00-RET-01		120	85	1.765
B-00-Comm-01		120	85	1.765
B-00-RET-01		120	85	1.765
B-00-RET-03		120	85	1.765
B-00-RET-02		120	85	1.765
B-00-RET-04		120	85	1.765
C-00-RET-01		120	85	1.765

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?
A-00-RET-01	NO (-43.2%)	NO
B-00-Comm-01	NO (-50.2%)	NO
B-00-RET-01	NO (-34%)	NO
B-00-RET-03	NO (-30.4%)	NO
B-00-RET-02	NO (-31.1%)	NO
B-00-RET-04	NO (-39.1%)	NO
C-00-RET-01	NO (-64%)	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			Building Use	
	Actual	Notional	% Area	Building Type
Floor area [m²]	1270	1270	100	Retail/Financial and Professional Services
External area [m²]	2443.4	2443.4		Restaurants and Cafes/Drinking Establishments/Takeaways
Weather	LON	LON		Offices and Workshop Businesses
Infiltration [m³/hm²@ 50Pa]	3	3		General Industrial and Special Industrial Groups
Average conductance [W/K]	897.23	762.41		Storage or Distribution
Average U-value [W/m²K]	0.37	0.31		Hotels
Alpha value* [%]	48.89	36.74		Residential Institutions: Hospitals and Care Homes
* Percentage of the building's average heat transfer coefficient which is due to thermal bridging				
				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/m²]

	Actual	Notional
Heating	8.43	5.33
Cooling	4.73	6.87
Auxiliary	6.87	11.5
Lighting	11.31	15.63
Hot water	0.59	0.59
Equipment*	20.26	20.26
TOTAL**	31.94	39.93

* 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/m²]

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

Energy & CO₂ Emissions Summary

	Actual	Notional
Heating + cooling demand [MJ/m²]	152.84	159.44
Primary energy [kWh _{PE} /m²]	47.39	58.97
Total emissions [kg/m²]	4.4	5.42

12.26 Block D

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 SSEF	Cool SSEER	Heat gen SEFF	Cool gen SEER
[ST] Variable refrigerant flow, [HS] ASHP, [HFT] Electricity, [CFT] Electricity									
Actual	81.9	71	8.4	4.7	6.9	2.7	4.16	2.64	6
Notional	50.7	108.8	5.3	6.9	11.5	2.64	4.4	----	----

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

D Be Lean Commercial

As designed

Date: Wed Nov 27 17:42:37 2024

Administrative information

Building Details

Address: Address 1, Address 2, City, Postcode

Certification tool

Calculation engine: SBEM

Calculation engine version: v6.1.e.1

Interface to calculation engine: Virtual Environment

Interface to calculation engine version: v7.0.26

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

Certifier details

Name: ME Engineers

Telephone number: Phone

Address: Street Address, City, Postcode

Foundation area [m²]: 357.3

The CO ₂ emission and primary energy rates of the building must not exceed the targets		
Target CO ₂ emission rate (TER), kgCO ₂ /m²annum	3.42	
Building CO ₂ emission rate (BER), kgCO ₂ /m²annum	2.82	
Target primary energy rate (TPER), kWh _{eq} /m²annum	37.44	
Building primary energy rate (BPER), kWh _{eq} /m²annum	30.53	
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	0.15	0.15	D000001D_W-1
Floors	0.18	0.11	0.11	D0000000_F
Pitched roofs	0.16	-	-	No heat loss pitched roofs
Flat roofs	0.18	0.11	0.11	D0000051_C
Windows** and roof windows	1.6	1.3	1.3	D000001D_W-1_O0
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 -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	3		

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- VRF - Be Lean

	Heating efficiency	Cooling efficiency	Radiant efficiency	SFP [W/(l/s)]	HR efficiency
This system	2.64	6	-	1.5	0.8
Standard value	2.5*	5	N/A	2^	N/A

Automatic monitoring & targeting with alarms for out-of-range values for this HVAC system

YES

* Standard shown is for all types >12 kW output, except absorption and gas engine heat pumps.

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

1- SYST0005-DHW

	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
D-01-Comm-Office Space		120	-	-
D-02-Comm-Office Space		120	-	-
D-03-Comm-Office Space		120	-	-
D-04-Comm-Office Space		120	-	-
D-05-Comm-Office Space		120	-	-
D-00-Comm-Office Space		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?
D-01-Comm-Office Space	NO (-65.8%)	YES
D-02-Comm-Office Space	NO (-65.8%)	YES
D-03-Comm-Office Space	NO (-65.8%)	YES
D-04-Comm-Office Space	NO (-65.8%)	YES
D-05-Comm-Office Space	NO (-70%)	YES
D-00-Comm-Office Space	NO (-39.5%)	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 [m²]	2032	2032
External area [m²]	2026.8	2026.8
Weather	LON	LON
Infiltration [m³/hm²@ 50Pa]	3	3
Average conductance [W/K]	1041.9	899.62
Average U-value [W/m²K]	0.51	0.44
Alpha value* [%]	24.1	18.81

* 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
100	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/m²]

	Actual	Notional
Heating	3.77	2.07
Cooling	4	5.61
Auxiliary	5.75	7.77
Lighting	6.11	8.95
Hot water	1.01	1.01
Equipment*	42.19	42.19
TOTAL**	20.64	25.42

* 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/m²]

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

Energy & CO₂ Emissions Summary

	Actual	Notional
Heating + cooling demand [MJ/m²]	96.57	108.65
Primary energy [kWh _{PE} /m²]	30.53	37.44
Total emissions [kg/m²]	2.82	3.42

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 SSEFF	Cool SSEER	Heat gen SEFF	Cool gen SEER
[ST] Variable refrigerant flow, [HS] ASHP, [HFT] Electricity, [CFT] Electricity									
Actual	36.6	60	3.8	4	5.8	2.7	4.16	2.64	6
Notional	19.7	88.9	2.1	5.6	7.8	2.64	4.4		

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

12.27 Block E

BRUKL Output Document

 HM Government

Compliance with England Building Regulations Part L 2021

Project name

E Be LeanCommercial

As designed

Date: Fri Nov 29 17:44:24 2024

Administrative information

Building Details

Address: Address 1, Address 2, City, Postcode

Certification tool

Calculation engine: SBEM

Calculation engine version: v6.1.e.1

Interface to calculation engine: Virtual Environment

Interface to calculation engine version: v7.0.26

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

Certifier details

Name: ME Engineers

Telephone number: Phone

Address: Street Address, City, Postcode

Foundation area [m²]: 346.48

The CO ₂ emission and primary energy rates of the building must not exceed the targets		
Target CO ₂ emission rate (TER), kgCO ₂ /m²:annum	11.28	
Building CO ₂ emission rate (BER), kgCO ₂ /m²:annum	9.11	
Target primary energy rate (TPER), kWh _{ep} /m²:annum	122.78	
Building primary energy rate (BPER), kWh _{ep} /m²:annum	98.31	
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	0.15	0.15	00000003_W-1
Floors	0.18	0.11	0.11	00000003_F
Pitched roofs	0.16	-	-	No heat loss pitched roofs
Flat roofs	0.18	0.11	0.11	00000003_C
Windows** and roof windows	1.6	1.3	1.3	00000003_W-1_O0
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-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	3

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- VRF - Be Lean

	Heating efficiency	Cooling efficiency	Radiant efficiency	SFP [W/(l/s)]	HR efficiency
This system	2.64	6	-	1.5	0.8
Standard value	2.5*	5	N/A	2^	N/A

Automatic monitoring & targeting with alarms for out-of-range values for this HVAC system

* Standard shown is for all types >12 kW output, except absorption and gas engine heat pumps.

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

1- SYST0005-DHW

	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
E-00-F&B		120	85	1.765
E-00-Office-01		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?
E-00-F&B	NO (-40.4%)	NO
E-00-Office-01	NO (-55%)	YES

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			Building Use	
	Actual	Notional	% Area	Building Type
Floor area [m²]	346.5	346.5		Retail/Financial and Professional Services
External area [m²]	796.3	796.3	53	Restaurants and Cafes/Drinking Establishments/Takeaways
Weather	LON	LON	47	Offices and Workshop Businesses
Infiltration [m³/hm²@ 50Pa]	3	3		General Industrial and Special Industrial Groups
Average conductance [W/K]	333.19	264.19		Storage or Distribution
Average U-value [W/m²K]	0.42	0.33		Hotels
Alpha value* [%]	48.32	32.23		Residential Institutions: Hospitals and Care Homes
				Residential Institutions: Residential Schools
				Residential Institutions: Universities and Colleges

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

Energy Consumption by End Use [kWh/m²]

	Actual	Notional
Heating	15.15	7.26
Cooling	12.17	13.49
Auxiliary	5.48	18.68
Lighting	10.6	16.46
Hot water	22.89	27.29
Equipment*	80.97	80.97
TOTAL**	66.3	83.18

** Total is net of any electrical energy displaced by CHP generators, if applicable.

Energy Production by Technology [kWh/m²]

	Actual	Notional
Photovoltaic systems	0	0
Wind turbines	0	0
CHP generators	0	0
Solar thermal systems	0	0
<i>Displaced electricity</i>	<i>0</i>	<i>0</i>

Energy & CO₂ Emissions Summary

	Actual	Notional
Heating + cooling demand [MJ/m ²]	329.65	282.65
Primary energy [kWh _{PE} /m ²]	98.31	122.78
Total emissions [kg/m ²]	9.11	11.28

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 SSEFF	Cool SSEER	Heat gen SEFF	Cool gen SEER
[ST] Variable refrigerant flow, [HS] ASHP, [HFT] Electricity, [CFT] Electricity									
Actual	147.2	182.5	15.2	12.2	5.5	2.7	4.16	2.64	6
Notional	69	213.6	7.3	13.5	15.9	2.64	4.4	----	----

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

12.28 Block F

BRUKL Output Document

 HM Government

Compliance with England Building Regulations Part L 2021

Project name

F Be Lean Commercial

As designed

Date: Mon Mar 17 09:29:55 2025

Administrative information

Building Details

Address: Address 1, Address 2, City, Postcode

Certification tool

Calculation engine: SBEM

Calculation engine version: v6.1.e.2

Interface to calculation engine: Virtual Environment

Interface to calculation engine version: v7.0.27

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

Certifier details

Name: ME Engineers

Telephone number: Phone

Address: Street Address, City, Postcode

Foundation area [m²]: 208.16

The CO₂ emission and primary energy rates of the building must not exceed the targets

Target CO ₂ emission rate (TER), kgCO ₂ /m² annum	10.46
Building CO ₂ emission rate (BER), kgCO ₂ /m² annum	8.24
Target primary energy rate (TPER), kWh _{eq} /m² annum	114.33
Building primary energy rate (BPER), kWh _{eq} /m² annum	89.58
Do the building's emission and primary energy rates exceed the targets?	BER =< TER BPER =< TPER

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

Fabric element	U _a -Limit	U _a -Calc	U _i -Calc	First surface with maximum value
Walls*	0.26	0.15	0.15	F0000000_W-1
Floors	0.18	0.11	0.11	F0000000_F
Pitched roofs	0.16	-	-	No heat loss pitched roofs
Flat roofs	0.18	0.11	0.11	L0000002_C
Windows** and roof windows	1.6	1.3	1.3	F0000000_W-1_O0
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-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	3		

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- VRF - Be Lean

	Heating efficiency	Cooling efficiency	Radiant efficiency	SFP [W/(l/s)]	HR efficiency
This system	2.64	6	-	1.5	0.8
Standard value	2.5*	5	N/A	2^	N/A
Automatic monitoring & targeting with alarms for out-of-range values for this HVAC system					YES

* Standard shown is for all types >12 kW output, except absorption and gas engine heat pumps.

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

1- SYST0005-DHW

	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
F-00-Retail-01	120	85	1.765
L00-F&B Restaurant	120	85	1.765

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?
F-00-Retail-01	NO (-40.3%)	NO
L00-F&B Restaurant	NO (-56.5%)	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			Building Use	
	Actual	Notional	% Area	Building Type
Floor area [m ²]	208.2	208.2	100	Retail/Financial and Professional Services
External area [m ²]	432.6	432.6		Restaurants and Cafes/Drinking Establishments/Takeaways
Weather	LON	LON		Offices and Workshop Businesses
Infiltration [m ³ /hm ² @ 50Pa]	3	3		General Industrial and Special Industrial Groups
Average conductance [W/K]	217.08	162.14		Storage or Distribution
Average U-value [W/m ² K]	0.5	0.37		Hotels
Alpha value* [%]	33.78	27.94		Residential Institutions: Hospitals and Care Homes
* Percentage of the building's average heat transfer coefficient which is due to thermal bridging				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/m²]

	Actual	Notional
Heating	9.15	4.55
Cooling	6.77	10.42
Auxiliary	9.42	17.27
Lighting	4.62	8.36
Hot water	30.67	37.01
Equipment*	48.61	48.61
TOTAL**	60.63	77.6

** Total is net of any electrical energy displaced by CHP generators, if applicable.

Energy Production by Technology [kWh/m²]

	Actual	Notional
Photovoltaic systems	0	0
Wind turbines	0	0
CHP generators	0	0
Solar thermal systems	0	0
<i>Displaced electricity</i>	<i>0</i>	<i>0</i>

Energy & CO₂ Emissions Summary

	Actual	Notional
Heating + cooling demand [MJ/m ²]	190.28	208.32
Primary energy [kWh _{PE} /m ²]	89.58	114.33
Total emissions [kg/m ²]	8.24	10.46

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 SSEFF	Cool SSEER	Heat gen SEFF	Cool gen SEER
[ST] Variable refrigerant flow, [HS] ASHP, [HFT] Electricity, [CFT] Electricity									
Actual	88.9	101.4	9.1	6.8	9.4	2.7	4.16	2.64	6
Notional	43.2	165.1	4.5	10.4	12.7	2.64	4.4	----	----

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

12.29 Block G

BRUKL Output Document

 HM Government

Compliance with England Building Regulations Part L 2021

Project name

G Be Lean Commercial

As designed

Date: Fri Nov 29 17:37:57 2024

Administrative information

Building Details

Address: Address 1, Address 2, City, Postcode

Certifier details

Name: ME Engineers

Telephone number: Phone

Address: Street Address, City, Postcode

Certification tool

Calculation engine: SBEM

Calculation engine version: v6.1.e.1

Interface to calculation engine: Virtual Environment

Interface to calculation engine version: v7.0.26

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

Foundation area [m²]: 438.09

The CO₂ emission and primary energy rates of the building must not exceed the targets

Target CO ₂ emission rate (TER), kgCO ₂ /m²:annum	10.48
Building CO ₂ emission rate (BER), kgCO ₂ /m²:annum	8.49
Target primary energy rate (TPER), kWh _{ef} /m²:annum	114.48
Building primary energy rate (BPER), kWh _{ef} /m²:annum	92.92
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	0.15	0.15	C000006E_W1
Floors	0.18	0.11	0.11	C000006E_F
Pitched roofs	0.16	-	-	No heat loss pitched roofs
Flat roofs	0.18	0.11	0.11	C000006E_C
Windows** and roof windows	1.6	1.3	1.3	C000006E_W1_O0
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 -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	3		

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- VRF - Be Lean

	Heating efficiency	Cooling efficiency	Radiant efficiency	SFP [W/(l/s)]	HR efficiency
This system	2.64	6	-	1.5	0.8
Standard value	2.5*	5	N/A	2^	N/A
Automatic monitoring & targeting with alarms for out-of-range values for this HVAC system					YES
* Standard shown is for all types >12 kW output, except absorption and gas engine heat pumps.					
^ Limiting SFP may be increased by the amounts specified in the Approved Documents if the installation includes particular components.					

1- SYST0005-DHW

	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
G-00-Office-01		120	-	-
G-00-RET-02		120	85	1.765
G-00-F&B-03		120	85	1.765

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?
G-00-Office-01	NO (-61.3%)	YES
G-00-RET-02	NO (-69.7%)	NO
G-00-F&B-03	NO (-68.5%)	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			Building Use	
	Actual	Notional	% Area	Building Type
Floor area [m²]	438.1	438.1	40	Retail/Financial and Professional Services
External area [m²]	898.3	898.3	47	Restaurants and Cafes/Drinking Establishments/Takeaways
Weather	LON	LON	14	Offices and Workshop Businesses
Infiltration [m³/hm²@ 50Pa]	3	3		General Industrial and Special Industrial Groups
Average conductance [W/K]	218.11	250.81		Storage or Distribution
Average U-value [W/m²K]	0.24	0.28		Hotels
Alpha value* [%]	36.03	23.3		Residential Institutions: Hospitals and Care Homes

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

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/m²]

	Actual	Notional
Heating	4	3.46
Cooling	15.55	13.86
Auxiliary	6.09	17.7
Lighting	17.47	19.01
Hot water	19.99	23.68
Equipment*	67.43	67.43
TOTAL**	63.1	77.7

* 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/m²]

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

Energy & CO₂ Emissions Summary

	Actual	Notional
Heating + cooling demand [MJ/m²]	271.93	252.39
Primary energy [kWh _{PE} /m²]	92.92	114.48
Total emissions [kg/m²]	8.49	10.48

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 SSEFF	Cool SSEER	Heat gen SEFF	Cool gen SEER
[ST] Variable refrigerant flow, [HS] ASHP, [HFT] Electricity, [CFT] Electricity									
Actual	38.9	233	4	15.5	6.1	2.7	4.16	2.64	6
Notional	32.9	219.5	3.5	13.9	15.4	2.64	4.4	----	----

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

12.30 Block H

BRUKL Output Document

HM Government

Compliance with England Building Regulations Part L 2021

Project name

H Be Lean Commercial

As designed

Date: Thu Nov 28 11:42:36 2024

Administrative information

Building Details

Address: Address 1, Address 2, City, Postcode

Certification tool

Calculation engine: SBEM

Calculation engine version: v6.1.e.1

Interface to calculation engine: Virtual Environment

Interface to calculation engine version: v7.0.26

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

Certifier details

Name: ME Engineers

Telephone number: Phone

Address: Street Address, City, Postcode

Foundation area [m²]: 240.58

The CO₂ emission and primary energy rates of the building must not exceed the targets

Target CO ₂ emission rate (TER), kgCO ₂ /m²:annum	13.06
Building CO ₂ emission rate (BER), kgCO ₂ /m²:annum	10.73
Target primary energy rate (TPER), kWh _{eq} /m²:annum	142.49
Building primary energy rate (BPER), kWh _{eq} /m²:annum	116.67
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	0.15	0.15	H0000008_W3
Floors	0.18	0.11	0.11	H0000008_F
Pitched roofs	0.16	-	-	No heat loss pitched roofs
Flat roofs	0.18	0.11	0.11	H0000164_C
Windows** and roof windows	1.6	1.3	1.3	H0000008_W3_O0
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 -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	3		

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- VRF - Be Lean

	Heating efficiency	Cooling efficiency	Radiant efficiency	SFP [W/(l/s)]	HR efficiency
This system	2.64	6	-	1.5	0.8
Standard value	2.5*	5	N/A	2^	N/A

Automatic monitoring & targeting with alarms for out-of-range values for this HVAC system

YES

* Standard shown is for all types >12 kW output, except absorption and gas engine heat pumps.

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

1- SYST0005-DHW

	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
H-00-RET-02		120	85	1.765
H-00-F&B Restaurant		120	85	1.765

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?
H-00-RET-02	NO (-74.2%)	NO
H-00-F&B Restaurant	NO (-59.6%)	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 [m²]	240.6	240.6
External area [m²]	493.1	493.1
Weather	LON	LON
Infiltration [m³/hm²@ 50Pa]	3	3
Average conductance [W/K]	169.95	168.03
Average U-value [W/m²K]	0.34	0.34
Alpha value* [%]	48.73	34.13

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

Building Use

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

Energy Consumption by End Use [kWh/m²]

	Actual	Notional
Heating	10.27	6.12
Cooling	13.53	15.07
Auxiliary	13.15	21.37
Lighting	14.43	20.71
Hot water	27.59	33.37
Equipment*	81.87	81.87
TOTAL**	78.96	96.64

* 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/m²]

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

Energy & CO₂ Emissions Summary

	Actual	Notional
Heating + cooling demand [MJ/m²]	302.5	296.91
Primary energy [kWh _{PE} /m²]	116.67	142.49
Total emissions [kg/m²]	10.73	13.06

12.31 Block J1J2

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] Variable refrigerant flow, [HS] ASHP, [HFT] Electricity, [CFT] Electricity										
	Actual	99.7	202.8	10.3	13.5	13.1	2.7	4.16	2.64	6
	Notional	58.1	238.8	6.1	15.1	17.4	2.64	4.4	----	----

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

J1J2 Be Lean Commercial

As designed

Date: Fri Nov 29 16:09:40 2024

Administrative information

Building Details

Address: Address 1, Address 2, Postcode

Certification tool

Calculation engine: SBEM

Calculation engine version: v6.1.e.1

Interface to calculation engine: Virtual Environment

Interface to calculation engine version: v7.0.26

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

Certifier details

Name: ME Engineers

Telephone number: Phone

Address: Street Address, City, Postcode

Foundation area [m²]: 93.04

The CO2 emission and primary energy rates of the building must not exceed the targets

Target CO ₂ emission rate (TER), kgCO ₂ /m²:annum	5.89
Building CO ₂ emission rate (BER), kgCO ₂ /m²:annum	4.94
Target primary energy rate (TPER), kWh _{eq} /m²:annum	63.9
Building primary energy rate (BPER), kWh _{eq} /m²:annum	53.82
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	0.15	0.15	J1000001_W-1
Floors	0.18	0.11	0.11	J1000001_F
Pitched roofs	0.16	-	-	No heat loss pitched roofs
Flat roofs	0.18	-	-	No heat loss flat roofs
Windows** and roof windows	1.6	1.3	1.3	J1000001_W-1_O0
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-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	3		

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- VRF - Be Lean

	Heating efficiency	Cooling efficiency	Radiant efficiency	SFP [W/(l/s)]	HR efficiency
This system	2.64	7	-	1.5	0.8
Standard value	2.5*	5	N/A	2^	N/A
Automatic monitoring & targeting with alarms for out-of-range values for this HVAC system					YES

* Standard shown is for all types >12 kW output, except absorption and gas engine heat pumps.

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

1- SYST0005-DHW

	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
J1-00-Retail-01	120	85	1.765

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?
J1-00-Retail-01	YES (+29.3%)	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			Building Use	
	Actual	Notional	% Area	Building Type
Floor area [m ²]	93	93	100	Retail/Financial and Professional Services
External area [m ²]	198.3	198.3		Restaurants and Cafes/Drinking Establishments/Takeaways
Weather	LON	LON		Offices and Workshop Businesses
Infiltration [m ³ /hm ² @ 50Pa]	3	3		General Industrial and Special Industrial Groups
Average conductance [W/K]	101.39	84.27		Storage or Distribution
Average U-value [W/m ² K]	0.51	0.42		Hotels
Alpha value* [%]	35.8	30.16		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/m²]

	Actual	Notional
Heating	10.17	9.37
Cooling	12.01	7.48
Auxiliary	5.73	11.3
Lighting	7.95	14.45
Hot water	0.59	0.59
Equipment*	20.26	20.26
TOTAL**	36.46	43.19

** Total is net of any electrical energy displaced by CHP generators, if applicable.

Energy Production by Technology [kWh/m²]

	Actual	Notional
Photovoltaic systems	0	0
Wind turbines	0	0
CHP generators	0	0
Solar thermal systems	0	0
<i>Displaced electricity</i>	<i>0</i>	<i>0</i>

Energy & CO₂ Emissions Summary

	Actual	Notional
Heating + cooling demand [MJ/m ²]	308.94	207.46
Primary energy [kWh _{PE} /m ²]	53.82	63.9
Total emissions [kg/m ²]	4.94	5.89

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 SSEFF	Cool SSEER	Heat gen SEFF	Cool gen SEER
[ST] Variable refrigerant flow, [HS] ASHP, [HFT] Electricity, [CFT] Electricity									
Actual	98.8	210.1	10.2	12	5.7	2.7	4.86	2.64	7
Notional	89	118.4	9.4	7.5	11.3	2.64	4.4	----	----

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

12.32 Block K

BRUKL Output Document

HM Government

Compliance with England Building Regulations Part L 2021

Project name

K Be Lean Commercial

As designed

Date: Thu Nov 28 15:37:50 2024

Administrative information

Building Details

Address: Address 1, Address 2, Postcode

Certification tool

Calculation engine: SBEM

Calculation engine version: v6.1.e.1

Interface to calculation engine: Virtual Environment

Interface to calculation engine version: v7.0.26

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

Certifier details

Name: ME Engineers

Telephone number: Phone

Address: Street Address, City, Postcode

Foundation area [m²]: 510.35

The CO₂ emission and primary energy rates of the building must not exceed the targets

Target CO ₂ emission rate (TER), kgCO ₂ /m²:annum	4.78
Building CO ₂ emission rate (BER), kgCO ₂ /m²:annum	3.95
Target primary energy rate (TPER), kWh _{eq} /m²:annum	52.22
Building primary energy rate (BPER), kWh _{eq} /m²:annum	42.81
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	0.15	0.15	C000006B_W1
Floors	0.18	0.11	0.11	C000006B_F
Pitched roofs	0.16	-	-	No heat loss pitched roofs
Flat roofs	0.18	0.11	0.11	K0000000_C
Windows** and roof windows	1.6	1.3	1.3	C000006B_W1_O0
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 -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	3		

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- VRF - Be Lean

	Heating efficiency	Cooling efficiency	Radiant efficiency	SFP [W/(l/s)]	HR efficiency
This system	2.64	6	-	1.5	0.8
Standard value	2.5*	5	N/A	2^	N/A

Automatic monitoring & targeting with alarms for out-of-range values for this HVAC system

YES

* Standard shown is for all types >12 kW output, except absorption and gas engine heat pumps.

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

1- SYST0006-DHW

	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
K-00-Office-02		120	-	-
K-01-Leisure		120	85	1.765
K-00-Leisure-01		120	85	1.765
K-00-RET-01		120	85	1.765

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?
K-00-Office-02	NO (-65.1%)	YES
K-01-Leisure	NO (-63.2%)	NO
K-00-Leisure-01	NO (-56.4%)	NO
K-00-RET-01	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			Building Use	
	Actual	Notional	% Area	Building Type
Floor area [m²]	1020.7	1020.7	94	Retail/Financial and Professional Services
External area [m²]	1202.8	1202.8		Restaurants and Cafes/Drinking Establishments/Takeaways
Weather	LON	LON	6	Offices and Workshop Businesses
Infiltration [m³/hm²@ 50Pa]	3	3		General Industrial and Special Industrial Groups
Average conductance [W/K]	532.47	441.93		Storage or Distribution
Average U-value [W/m²K]	0.44	0.37		Hotels
Alpha value* [%]	46.03	37.1		Residential Institutions: Hospitals and Care Homes
* Percentage of the building's average heat transfer coefficient which is due to thermal bridging				
				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/m²]

	Actual	Notional
Heating	5.04	2.58
Cooling	4.54	6.48
Auxiliary	6.8	10.69
Lighting	11.91	15.06
Hot water	0.62	0.62
Equipment*	21.53	21.53
TOTAL**	28.91	35.43

* 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/m²]

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

Energy & CO₂ Emissions Summary

	Actual	Notional
Heating + cooling demand [MJ/m²]	117	127.19
Primary energy [kWh _{PE} /m²]	42.81	52.22
Total emissions [kg/m²]	3.95	4.78

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 SSEFF	Cool SSEER	Heat gen SEFF	Cool gen SEER
[ST] Variable refrigerant flow, [HS] ASHP, [HFT] Electricity, [CFT] Electricity									
Actual	49	68	5	4.5	6.8	2.7	4.16	2.64	6
Notional	24.5	102.7	2.6	6.5	10.7	2.64	4.4	-----	-----

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

12.33 Block L

BRUKL Output Document

HM Government

Compliance with England Building Regulations Part L 2021

Project name

Aylesham Centre_Block L_Be Lean

As designed

Date: Sun Dec 01 21:30:15 2024

Administrative information

Building Details

Address: Address 1, Address 2, Postcode

Certification tool

Calculation engine: SBEM

Calculation engine version: v6.1.e.1

Interface to calculation engine: Virtual Environment

Interface to calculation engine version: v7.0.26

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

Certifier details

Name: ME Engineers

Telephone number: Phone

Address: Street Address, City, Postcode

Foundation area [m²]: 18.49

The CO₂ emission and primary energy rates of the building must not exceed the targets

Target CO ₂ emission rate (TER), kgCO ₂ /m²:annum	6.61
Building CO ₂ emission rate (BER), kgCO ₂ /m²:annum	5.46
Target primary energy rate (TPER), kWh _{pe} /m²:annum	71.35
Building primary energy rate (BPER), kWh _{pe} /m²:annum	59.21
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 -Limit	U _a -Calc	U _i -Calc	First surface with maximum value
Walls*	0.26	0.15	0.15	L0000075_W1
Floors	0.18	0.11	0.11	L0000075_F
Pitched roofs	0.16	-	-	No heat loss pitched roofs
Flat roofs	0.18	-	-	No heat loss flat roofs
Windows** and roof windows	1.6	1.3	1.3	L0000075_W1_O0
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-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	3

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- VRF - Be Lean

	Heating efficiency	Cooling efficiency	Radiant efficiency	SFP [W/(l/s)]	HR efficiency
This system	2.64	6	-	1.3	0.8
Standard value	2.5*	5	N/A	2^	N/A

Automatic monitoring & targeting with alarms for out-of-range values for this HVAC system YES

* Standard shown is for all types >12 kW output, except absorption and gas engine heat pumps.

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

1- SYST0006-DHW

	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
L-00-RET-01	120	85 1.765

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?
L-00-RET-01	YES (+1.2%)	YES

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			Building Use	
	Actual	Notional	% Area	Building Type
Floor area [m²]	18.5	18.5	100	Retail/Financial and Professional Services
External area [m²]	44.7	44.7		Restaurants and Cafes/Drinking Establishments/Takeaways
Weather	LON	LON		Offices and Workshop Businesses
Infiltration [m³/hm²@ 50Pa]	3	3		General Industrial and Special Industrial Groups
Average conductance [W/K]	22.53	20.29		Storage or Distribution
Average U-value [W/m²K]	0.5	0.45		Hotels
Alpha value* [%]	36.3	26.66		Residential Institutions: Hospitals and Care Homes

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

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/m²]

	Actual	Notional
Heating	12.89	12.17
Cooling	12.34	7.11
Auxiliary	5.95	10.89
Lighting	8.24	17.34
Hot water	0.59	0.59
Equipment*	20.26	20.26
TOTAL**	40.02	48.1

* 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/m²]

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

Energy & CO₂ Emissions Summary

	Actual	Notional
Heating + cooling demand [MJ/m²]	310.51	228.22
Primary energy [kWh _{PE} /m²]	59.21	71.35
Total emissions [kg/m²]	5.46	6.61

12.34 Block N

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 SSEFF	Cool SSEER	Heat gen SEFF	Cool gen SEER
[ST] Variable refrigerant flow, [HS] ASHP, [HFT] Electricity, [CFT] Electricity									
Actual	124.1	186.4	12.9	12.3	6	2.68	4.19	2.64	6
Notional	115.6	112.6	12.2	7.1	10.9	2.64	4.4	----	----

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

N Be Lean CommercialAs designed

Date: Thu Nov 28 12:52:35 2024

Administrative information

Building Details

Address: Address 1, Address 2, Postcode

Certification tool

Calculation engine: SBEM

Calculation engine version: v6.1.e.1

Interface to calculation engine: Virtual Environment

Interface to calculation engine version: v7.0.26

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

Certifier details

Name: ME Engineers

Telephone number: Phone

Address: Street Address, City, Postcode

Foundation area [m²]: 99.19

The CO ₂ emission and primary energy rates of the building must not exceed the targets		
Target CO ₂ emission rate (TER), kgCO ₂ /m²annum	5.55	
Building CO ₂ emission rate (BER), kgCO ₂ /m²annum	4.36	
Target primary energy rate (TPER), kWh _{pe} /m²annum	60.7	
Building primary energy rate (BPER), kWh _{pe} /m²annum	48.14	
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 _a -Limit	U _a -Calc	U _i -Calc	First surface with maximum value
Walls*	0.26	0.15	0.15	N000005A_W1
Floors	0.18	0.11	0.11	N000005A_F
Pitched roofs	0.16	-	-	No heat loss pitched roofs
Flat roofs	0.18	-	-	No heat loss flat roofs
Windows** and roof windows	1.6	1.3	1.3	N000005A_W1_O0
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 -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	3		

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- VRF - Be Lean

	Heating efficiency	Cooling efficiency	Radiant efficiency	SFP [W/(l/s)]	HR efficiency
This system	2.64	6	-	1.3	0.8
Standard value	2.5*	5	N/A	2^	N/A

Automatic monitoring & targeting with alarms for out-of-range values for this HVAC system

YES

* Standard shown is for all types >12 kW output, except absorption and gas engine heat pumps.

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

1- SYST0006-DHW

	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
N-00-Retail-01		120		85	1.765

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?
N-00-Retail-01	YES (+40.4%)	YES

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			Building Use	
	Actual	Notional	% Area	Building Type
Floor area [m²]	99.2	99.2	100	Retail/Financial and Professional Services
External area [m²]	165.8	165.8		Restaurants and Cafes/Drinking Establishments/Takeaways
Weather	LON	LON		Offices and Workshop Businesses
Infiltration [m³/hm²@ 50Pa]	3	3		General Industrial and Special Industrial Groups
Average conductance [W/K]	60.89	59.4		Storage or Distribution
Average U-value [W/m²K]	0.37	0.36		Hotels
Alpha value* [%]	36.15	24.23		Residential Institutions: Hospitals and Care Homes
* Percentage of the building's average heat transfer coefficient which is due to thermal bridging				
				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/m²]

	Actual	Notional
Heating	3.78	3.71
Cooling	12.49	8.3
Auxiliary	5.81	12.88
Lighting	10.15	15.72
Hot water	0.59	0.59
Equipment*	20.26	20.26
TOTAL**	32.83	41.21

* 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/m²]

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

Energy & CO₂ Emissions Summary

	Actual	Notional
Heating + cooling demand [MJ/m²]	226.11	166.76
Primary energy [kWh _{PE} /m²]	48.14	60.7
Total emissions [kg/m²]	4.36	5.55

12.35 Morrisons

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 SSEFF	Cool SSEER	Heat gen SEFF	Cool gen SEER
[ST] Variable refrigerant flow, [HS] ASHP, [HFT] Electricity, [CFT] Electricity									
Actual	36.7	189.4	3.8	12.5	5.8	2.69	4.21	2.64	6
Notional	35.2	131.5	3.7	8.3	12.9	2.64	4.4	-----	-----

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

Morrisons Be Lean CommercialAs designed

Date: Thu Nov 28 15:43:14 2024

Administrative information

Building Details

Address: Address 1, Address 2, Postcode

Certification tool

Calculation engine: SBEM

Calculation engine version: v6.1.e.1

Interface to calculation engine: Virtual Environment

Interface to calculation engine version: v7.0.26

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

Certifier details

Name: ME Engineers

Telephone number: Phone

Address: Street Address, City, Postcode

Foundation area [m²]: 3814.01

The CO₂ emission and primary energy rates of the building must not exceed the targets

Target CO ₂ emission rate (TER), kgCO ₂ /m ² annum	4.94
Building CO ₂ emission rate (BER), kgCO ₂ /m ² annum	4.18
Target primary energy rate (TPER), kWh _{eq} /m ² annum	54.23
Building primary energy rate (BPER), kWh _{eq} /m ² annum	45.94
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	0.15	0.15	P000007B_W3
Floors	0.18	0.11	0.11	P000007B_F
Pitched roofs	0.16	-	-	No heat loss pitched roofs
Flat roofs	0.18	-	-	No heat loss flat roofs
Windows** and roof windows	1.6	1.3	1.3	P0000087_W3_O0
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 -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	3		

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- VRF - Be Lean

	Heating efficiency	Cooling efficiency	Radiant efficiency	SFP [W/(l/s)]	HR efficiency
This system	2.64	6	-	1.3	0.8
Standard value	2.5*	5	N/A	2^	N/A

Automatic monitoring & targeting with alarms for out-of-range values for this HVAC system

YES

* Standard shown is for all types >12 kW output, except absorption and gas engine heat pumps.

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

1- SYST0006-DHW

	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
P-00-Morrison's Retail		120		85	1.765
P-00-Morrison's Sales Floor		120		85	1.765
P-00-Morrison's BOH		120		85	1.765
P-00-Morrison's Sales Floor		120		85	1.765
P-00-Morrison's Cafe		120		85	1.765
P-00-Morrison's Sales Lobby		120		85	1.765

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?
P-00-Morrison's Retail	N/A	N/A
P-00-Morrison's Sales Floor	NO (-52.9%)	NO
P-00-Morrison's BOH	N/A	N/A
P-00-Morrison's Sales Floor	N/A	N/A
P-00-Morrison's Cafe	N/A	N/A
P-00-Morrison's Sales Lobby	YES (+103.7%)	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 [m²]	3814	3814
External area [m²]	4084.2	4084.1
Weather	LON	LON
Infiltration [m³/hm²@ 50Pa]	3	3
Average conductance [W/K]	506.98	752.56
Average U-value [W/m²K]	0.12	0.18
Alpha value* [%]	8.53	6.62

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

Building Use

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

Energy Consumption by End Use [kWh/m²]

	Actual	Notional
Heating	0.15	0.24
Cooling	9.3	6.88
Auxiliary	5.95	9.27
Lighting	15.29	19.9
Hot water	0.59	0.59
Equipment*	20.26	20.26
TOTAL**	31.28	36.89

* 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/m²]

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

Energy & CO₂ Emissions Summary

	Actual	Notional
Heating + cooling demand [MJ/m²]	141.8	111.32
Primary energy [kWh _{PE} /m²]	45.94	54.23
Total emissions [kg/m²]	4.18	4.94

APPENDIX D Non-Residential Commercial - Be Green

12.36 Block ABC

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 SSEFF	Cool SSEER	Heat gen SEFF	Cool gen SEER
[ST] Variable refrigerant flow, [HS] ASHP, [HFT] Electricity, [CFT] Electricity									
Actual	1.4	140.4	0.1	9.3	6	2.68	4.19	2.64	6
Notional	2.3	109	0.2	6.9	9.3	2.64	4.4	-----	-----

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

ABC Be Green CommercialAs designed

Date: Wed Nov 27 16:37:33 2024

Administrative information

Building Details

Address: Address 1, Address 2, City, Postcode

Certifier details

Name: ME Engineers

Telephone number: Phone

Address: Street Address, City, Postcode

Certification tool

Calculation engine: SBEM

Calculation engine version: v6.1.e.1

Interface to calculation engine: Virtual Environment

Interface to calculation engine version: v7.0.26

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

Foundation area [m²]: 1269.97

The CO ₂ emission and primary energy rates of the building must not exceed the targets		
Target CO ₂ emission rate (TER), kgCO ₂ /m²:annum	5.42	
Building CO ₂ emission rate (BER), kgCO ₂ /m²:annum	3.5	
Target primary energy rate (TPER), kWh _e /m²:annum	58.97	
Building primary energy rate (BPER), kWh _e /m²:annum	37.88	
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	0.15	0.15	00000000_W-1
Floors	0.18	0.11	0.11	00000000_F
Pitched roofs	0.16	-	-	No heat loss pitched roofs
Flat roofs	0.18	0.11	0.11	00000000_C
Windows** and roof windows	1.6	1.3	1.3	00000000_W-1_O0
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-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	3		

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- VRF - Be Green

	Heating efficiency	Cooling efficiency	Radiant efficiency	SFP [W/(l/s)]	HR efficiency
This system	5	6	-	1.5	0.8
Standard value	2.5*	5	N/A	2^	N/A

Automatic monitoring & targeting with alarms for out-of-range values for this HVAC system

YES

* Standard shown is for all types >12 kW output, except absorption and gas engine heat pumps.

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

1- SYST0005-DHW

	Water heating efficiency	Storage loss factor [kWh/litre per day]
This building	3	-
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
A-00-RET-01		120	85	1.765
B-00-Comm-01		120	85	1.765
B-00-RET-01		120	85	1.765
B-00-RET-03		120	85	1.765
B-00-RET-02		120	85	1.765
B-00-RET-04		120	85	1.765
C-00-RET-01		120	85	1.765

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?
A-00-RET-01	NO (-43.2%)	NO
B-00-Comm-01	NO (-50.2%)	NO
B-00-RET-01	NO (-34%)	NO
B-00-RET-03	NO (-30.4%)	NO
B-00-RET-02	NO (-31.1%)	NO
B-00-RET-04	NO (-39.1%)	NO
C-00-RET-01	NO (-64%)	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 [m²]	1270	1270
External area [m²]	2443.4	2443.4
Weather	LON	LON
Infiltration [m³/hm²@ 50Pa]	3	3
Average conductance [W/K]	897.23	762.41
Average U-value [W/m²K]	0.37	0.31
Alpha value* [%]	48.89	36.74

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

Building Use

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

Energy Consumption by End Use [kWh/m²]

	Actual	Notional
Heating	4.45	5.33
Cooling	4.73	6.87
Auxiliary	6.87	11.5
Lighting	11.31	15.63
Hot water	0.57	0.59
Equipment*	20.26	20.26
TOTAL**	27.93	39.93

* 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/m²]

	Actual	Notional
Photovoltaic systems	2.28	0
Wind turbines	0	0
CHP generators	0	0
Solar thermal systems	0	0
<i>Displaced electricity</i>	<i>2.28</i>	<i>0</i>

Energy & CO₂ Emissions Summary

	Actual	Notional
Heating + cooling demand [MJ/m²]	152.84	159.44
Primary energy [kWh _{PE} /m²]	37.88	58.97
Total emissions [kg/m²]	3.5	5.42

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] Variable refrigerant flow, [HS] ASHP, [HFT] Electricity, [CFT] Electricity										
	Actual	81.9	71	4.5	4.7	6.9	5.11	4.16	5	6
	Notional	50.7	108.8	5.3	6.9	11.5	2.64	4.4	----	----

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

12.37 Block D

BRUKL Output Document

 HM Government

Compliance with England Building Regulations Part L 2021

Project name

D Be Green Commercial

As designed

Date: Wed Nov 27 17:46:07 2024

Administrative information

Building Details

Address: Address 1, Address 2, City, Postcode

Certification tool

Calculation engine: SBEM

Calculation engine version: v6.1.e.1

Interface to calculation engine: Virtual Environment

Interface to calculation engine version: v7.0.26

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

Certifier details

Name: ME Engineers

Telephone number: Phone

Address: Street Address, City, Postcode

Foundation area [m²]: 357.3

The CO₂ emission and primary energy rates of the building must not exceed the targets

Target CO ₂ emission rate (TER), kgCO ₂ /m²annum	3.42
Building CO ₂ emission rate (BER), kgCO ₂ /m²annum	2.21
Target primary energy rate (TPER), kWh _e /m²annum	37.44
Building primary energy rate (BPER), kWh _e /m²annum	23.95
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	0.15	0.15	D000001D_W-1
Floors	0.18	0.11	0.11	D0000000_F
Pitched roofs	0.16	-	-	No heat loss pitched roofs
Flat roofs	0.18	0.11	0.11	D0000051_C
Windows** and roof windows	1.6	1.3	1.3	D000001D_W-1_O0
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 -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	3		

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- VRF - Be Green

	Heating efficiency	Cooling efficiency	Radiant efficiency	SFP [W/(l/s)]	HR efficiency
This system	5	6	-	1.5	0.8
Standard value	2.5*	5	N/A	2^	N/A

Automatic monitoring & targeting with alarms for out-of-range values for this HVAC system	YES
---	-----

* Standard shown is for all types >12 kW output, except absorption and gas engine heat pumps.

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

1- SYST0005-DHW

	Water heating efficiency	Storage loss factor [kWh/litre per day]
This building	3	-
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
D-01-Comm-Office Space	120	-	-
D-02-Comm-Office Space	120	-	-
D-03-Comm-Office Space	120	-	-
D-04-Comm-Office Space	120	-	-
D-05-Comm-Office Space	120	-	-
D-00-Comm-Office Space	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?
D-01-Comm-Office Space	NO (-65.8%)	YES
D-02-Comm-Office Space	NO (-65.8%)	YES
D-03-Comm-Office Space	NO (-65.8%)	YES
D-04-Comm-Office Space	NO (-65.8%)	YES
D-05-Comm-Office Space	NO (-70%)	YES
D-00-Comm-Office Space	NO (-39.5%)	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			Building Use	
	Actual	Notional	% Area	Building Type
Floor area [m²]	2032	2032		Retail/Financial and Professional Services
External area [m²]	2026.8	2026.8		Restaurants and Cafes/Drinking Establishments/Takeaways
Weather	LON	LON	100	Offices and Workshop Businesses
Infiltration [m³/hm²@ 50Pa]	3	3		General Industrial and Special Industrial Groups
Average conductance [W/K]	1041.9	899.62		Storage or Distribution
Average U-value [W/m²K]	0.51	0.44		Hotels
Alpha value* [%]	24.1	18.81		Residential Institutions: Hospitals and Care Homes
				Residential Institutions: Residential Schools
				Residential Institutions: Universities and Colleges

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

Energy Consumption by End Use [kWh/m²]

	Actual	Notional
Heating	1.99	2.07
Cooling	4	5.61
Auxiliary	5.75	7.77
Lighting	6.11	8.95
Hot water	0.96	1.01
Equipment*	42.19	42.19
TOTAL**	18.81	25.42

* 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/m²]

	Actual	Notional
Photovoltaic systems	2.57	0
Wind turbines	0	0
CHP generators	0	0
Solar thermal systems	0	0
<i>Displaced electricity</i>	2.57	0

Energy & CO₂ Emissions Summary

	Actual	Notional
Heating + cooling demand [MJ/m ²]	96.57	108.65
Primary energy [kWh _{PE} /m ²]	23.95	37.44
Total emissions [kg/m ²]	2.21	3.42

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 SSEFF	Cool SSEER	Heat gen SEFF	Cool gen SEER
[ST] Variable refrigerant flow, [HS] ASHP, [HFT] Electricity, [CFT] Electricity									
Actual	36.6	60	2	4	5.8	5.11	4.16	5	6
Notional	19.7	88.9	2.1	5.6	7.8	2.64	4.4	-----	-----

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

12.38 Block E

BRUKL Output Document

 HM Government

Compliance with England Building Regulations Part L 2021

Project name

E Be Green CommercialAs designed

Date: Fri Nov 29 17:47:58 2024

Administrative information

Building Details

Address: Address 1, Address 2, City, Postcode

Certification tool

Calculation engine: SBEM
Calculation engine version: v6.1.e.1
Interface to calculation engine: Virtual Environment
Interface to calculation engine version: v7.0.26
BRUKL compliance module version: v6.1.e.1

Certifier details

Name: ME Engineers
Telephone number: Phone
Address: Street Address, City, Postcode

Foundation area [m²]: 346.48

The CO₂ emission and primary energy rates of the building must not exceed the targets

Target CO ₂ emission rate (TER), kgCO ₂ /m²annum	11.28
Building CO ₂ emission rate (BER), kgCO ₂ /m²annum	6.96
Target primary energy rate (TPER), kWh _{eq} /m²annum	122.78
Building primary energy rate (BPER), kWh _{eq} /m²annum	75.06
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	0.15	0.15	00000003_W-1
Floors	0.18	0.11	0.11	00000003_F
Pitched roofs	0.16	-	-	No heat loss pitched roofs
Flat roofs	0.18	0.11	0.11	00000003_C
Windows** and roof windows	1.6	1.3	1.3	00000003_W-1_O0
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-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	3		

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- VRF - Be Green

	Heating efficiency	Cooling efficiency	Radiant efficiency	SFP [W/(l/s)]	HR efficiency
This system	5	6	-	1.5	0.8
Standard value	2.5*	5	N/A	2^	N/A

Automatic monitoring & targeting with alarms for out-of-range values for this HVAC system

YES

* Standard shown is for all types >12 kW output, except absorption and gas engine heat pumps.

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

1- SYST0005-DHW

	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
E-00-F&B		120	85	1.765
E-00-Office-01		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?
E-00-F&B	NO (-40.4%)	NO
E-00-Office-01	NO (-55%)	YES

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			Building Use	
	Actual	Notional	% Area	Building Type
Floor area [m²]	346.5	346.5		Retail/Financial and Professional Services
External area [m²]	796.3	796.3	53	Restaurants and Cafes/Drinking Establishments/Takeaways
Weather	LON	LON	47	Offices and Workshop Businesses
Infiltration [m³/hm²@ 50Pa]	3	3		General Industrial and Special Industrial Groups
Average conductance [W/K]	333.19	264.19		Storage or Distribution
Average U-value [W/m²K]	0.42	0.33		Hotels
Alpha value* [%]	48.32	32.23		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/m²]		
	Actual	Notional
Heating	8	7.26
Cooling	12.17	13.49
Auxiliary	5.48	18.68
Lighting	10.6	16.46
Hot water	22.89	27.29
Equipment*	80.97	80.97
TOTAL**	59.15	83.18

* 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/m²]		
	Actual	Notional
Photovoltaic systems	8.37	0
Wind turbines	0	0
CHP generators	0	0
Solar thermal systems	0	0
Displaced electricity	8.37	0

Energy & CO ₂ Emissions Summary		
	Actual	Notional
Heating + cooling demand [MJ/m²]	329.65	282.65
Primary energy [kWh _{HE} /m²]	75.06	122.78
Total emissions [kg/m²]	6.96	11.28

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] Variable refrigerant flow, [HS] ASHP, [HFT] Electricity, [CFT] Electricity									
Actual	147.2	182.5	8	12.2	5.5	5.11	4.16	5	6
Notional	69	213.6	7.3	13.5	15.9	2.64	4.4	----	----

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

12.39 Block F

BRUKL Output Document

 HM Government

Compliance with England Building Regulations Part L 2021

Project name

F Be Green Commercial

As designed

Date: Mon Mar 17 09:48:57 2025

Administrative information

Building Details

Address: Address 1, Address 2, City, Postcode

Certification tool

Calculation engine: SBEM

Calculation engine version: v6.1.e.2

Interface to calculation engine: Virtual Environment

Interface to calculation engine version: v7.0.27

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

Certifier details

Name: ME Engineers

Telephone number: Phone

Address: Street Address, City, Postcode

Foundation area [m²]: 208.16

The CO₂ emission and primary energy rates of the building must not exceed the targets

Target CO ₂ emission rate (TER), kgCO ₂ /m²:annum	10.46
Building CO ₂ emission rate (BER), kgCO ₂ /m²:annum	4.99
Target primary energy rate (TPER), kWh _{pe} /m²:annum	114.33
Building primary energy rate (BPER), kWh _{pe} /m²:annum	52.64
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	0.15	0.15	F0000000_W-1
Floors	0.18	0.11	0.11	F0000000_F
Pitched roofs	0.16	-	-	No heat loss pitched roofs
Flat roofs	0.18	0.11	0.11	L0000002_C
Windows** and roof windows	1.6	1.3	1.3	F0000000_W-1_O0
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 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	3		

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- VRF - Be Green

	Heating efficiency	Cooling efficiency	Radiant efficiency	SFP [W/(l/s)]	HR efficiency
This system	5	6	-	1.5	0.8
Standard value	2.5*	5	N/A	2^	N/A
Automatic monitoring & targeting with alarms for out-of-range values for this HVAC system					YES

* Standard shown is for all types >12 kW output, except absorption and gas engine heat pumps.

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

1- SYST0005-DHW

	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
F-00-Retail-01	120	85	1.765
L00-F&B Restaurant	120	85	1.765

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?
F-00-Retail-01	NO (-40.3%)	NO
L00-F&B Restaurant	NO (-56.5%)	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			Building Use	
	Actual	Notional	% Area	Building Type
Floor area [m ²]	208.2	208.2	100	Retail/Financial and Professional Services
External area [m ²]	432.6	432.6		Restaurants and Cafes/Drinking Establishments/Takeaways
Weather	LON	LON		Offices and Workshop Businesses
Infiltration [m ³ /hm ² @ 50Pa]	3	3		General Industrial and Special Industrial Groups
Average conductance [W/K]	217.08	162.14		Storage or Distribution
Average U-value [W/m ² K]	0.5	0.37		Hotels
Alpha value* [%]	33.78	27.94		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/m²]

	Actual	Notional
Heating	4.83	4.55
Cooling	6.77	10.42
Auxiliary	9.42	17.27
Lighting	4.62	8.36
Hot water	30.67	37.01
Equipment*	48.61	48.61
TOTAL **	56.31	77.6

^{**} Total is net of any electrical energy displaced by CHP generators, if applicable.

Energy Production by Technology [kWh/m²]

	Actual	Notional
Photovoltaic systems	20.77	0
Wind turbines	0	0
CHP generators	0	0
Solar thermal systems	0	0
<i>Displaced electricity</i>	<i>20.77</i>	<i>0</i>

Energy & CO₂ Emissions Summary

	Actual	Notional
Heating + cooling demand [MJ/m ²]	190.28	208.32
Primary energy [kWh _{PE} /m ²]	52.64	114.33
Total emissions [kg/m ²]	4.99	10.46

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 SSEFF	Cool SSEER	Heat gen SEFF	Cool gen SEER
[ST] Variable refrigerant flow, [HS] ASHP, [HFT] Electricity, [CFT] Electricity									
Actual	88.9	101.4	4.8	6.8	9.4	5.11	4.16	5	6
Notional	43.2	165.1	4.5	10.4	12.7	2.64	4.4	----	----

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

12.40 Block G

BRUKL Output Document

 HM Government

Compliance with England Building Regulations Part L 2021

Project name

G Be Green-Commercial

As designed

Date: Fri Nov 29 17:40:51 2024

Administrative information

Building Details

Address: Address 1, Address 2, City, Postcode

Certification tool

Calculation engine: SBEM

Calculation engine version: v6.1.e.1

Interface to calculation engine: Virtual Environment

Interface to calculation engine version: v7.0.26

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

Certifier details

Name: ME Engineers

Telephone number: Phone

Address: Street Address, City, Postcode

Foundation area [m²]: 438.09

The CO₂ emission and primary energy rates of the building must not exceed the targets

Target CO ₂ emission rate (TER), kgCO ₂ /m ² annum	10.48
Building CO ₂ emission rate (BER), kgCO ₂ /m ² annum	6.5
Target primary energy rate (TPER), kWh _{ep} /m ² annum	114.48
Building primary energy rate (BPER), kWh _{ep} /m ² annum	70.53
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	0.15	0.15	C000006E_W1
Floors	0.18	0.11	0.11	C000006E_F
Pitched roofs	0.16	-	-	No heat loss pitched roofs
Flat roofs	0.18	0.11	0.11	C000006E_C
Windows** and roof windows	1.6	1.3	1.3	C000006E_W1_O0
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-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	3		