

Project name

Mercure Hotel LEAN**As designed****Date:** Tue Mar 10 10:12:43 2026

Administrative information

Building Details

Address: Mercure Hotel Ext, Shepiston Lane, Hayes, UB3 1LP

Certifier details

Name: Neil Ingham**Telephone number:****Address:** The Mille 1000GWR, Brentford, TW8 9DW

Certification tool

Calculation engine: SBEM**Calculation engine version:** v6.1.e.2**Interface to calculation engine:** DesignBuilder SBEM**Interface to calculation engine version:** v7.3.1**BRUKL compliance module version:** v6.1.e.1**Foundation area [m²]:** 660.42The 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	12.43
Building CO ₂ emission rate (BER), kgCO ₂ /m ² annum	7.96
Target primary energy rate (TPER), kWh _{PE} /m ² annum	134.88
Building primary energy rate (BPER), kWh _{PE} /m ² annum	86.79
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	Floor 0 - Circ_P_5
Floors	0.18	0.11	0.25	Floor 1 - 1st - Rooms_F_5
Pitched roofs	0.16	-	-	No heat loss pitched roofs
Flat roofs	0.18	0.1	0.1	Floor 0 - Rooms_R_4
Windows** and roof windows	1.6	1.3	1.3	Floor 0 - Circ_G_10
Rooflights***	2.2	-	-	No external rooflights
Personnel doors^	1.6	1.3	1.3	Floor 3 W - 3rd - Circ_D_6
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_{i-Calc} = Calculated maximum individual element U-values [W/(m²K)]U_{a-Calc} = Calculated area-weighted average U-values [W/(m²K)]

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

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

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

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

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

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

Building services

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

Whole building lighting automatic monitoring & targeting with alarms for out-of-range values	NO
Whole building electric power factor achieved by power factor correction	<0.9

1- Notional VRF

	Heating efficiency	Cooling efficiency	Radiant efficiency	SFP [W/(l/s)]	HR efficiency
This system	2.69	5.89	-	-	-
Standard value	2.5*	5	N/A	N/A	N/A
Automatic monitoring & targeting with alarms for out-of-range values for this HVAC system					YES
* Standard shown is for all types >12 kW output, except absorption and gas engine heat pumps.					

1- Notional HP DHW

	Water heating efficiency	Storage loss factor [kWh/litre per day]
This building	2.86	0
Standard value	2*	N/A
* Standard shown is for all types except absorption and gas engine heat pumps.		

Zone-level mechanical ventilation, exhaust, and terminal units

ID	System type in the Approved Documents
A	Local supply or extract ventilation units
B	Zonal supply system where the fan is remote from the zone
C	Zonal extract system where the fan is remote from the zone
D	Zonal balanced supply and extract ventilation system
E	Local balanced supply and extract ventilation units
F	Other local ventilation units
G	Fan assisted terminal variable air volume units
H	Fan coil units
I	Kitchen extract with the fan remote from the zone and a grease filter
NB: Limiting SFP may be increased by the amounts specified in the Approved Documents if the installation includes particular components.	

Zone name	SFP [W/(l/s)]										HR efficiency	
ID of system type	A	B	C	D	E	F	G	H	I		Zone	Standard
Standard value	0.3	1.1	0.5	2.3	2	0.5	0.5	0.4	1			
Floor 0 - Circ	-	-	-	-	0.9	-	-	-	-		0.85	N/A
Floor 0 - Rooms	-	-	-	-	0.9	-	-	-	-		0.85	N/A
Floor 0 - Reception	-	-	-	-	0.9	-	-	-	-		0.85	N/A
Floor 0 - Office	-	-	-	-	0.9	-	-	-	-		0.85	N/A
Floor 0 - WC	0.3	-	-	-	-	-	-	-	-		-	N/A
Floor 1 - 1st - Rooms	-	-	-	-	0.9	-	-	-	-		0.85	N/A
Floor 1 - 1st - Circ	-	-	-	-	0.9	-	-	-	-		0.85	N/A
Floor 2 - 2nd - Rooms	-	-	-	-	0.9	-	-	-	-		0.85	N/A
Floor 2 - 2nd - Circ	-	-	-	-	0.9	-	-	-	-		0.85	N/A
Floor 3 W - 3rd - Rooms	-	-	-	-	0.9	-	-	-	-		0.85	N/A
Floor 3 W - 3rd - Circ	-	-	-	-	0.9	-	-	-	-		0.85	N/A
Floor 3 E - 3rd - Rooms	-	-	-	-	0.9	-	-	-	-		0.85	N/A
Floor 3 E - 3rd - Circ	-	-	-	-	0.9	-	-	-	-		0.85	N/A

Zone name	SFP [W/(l/s)]										HR efficiency	
ID of system type	A	B	C	D	E	F	G	H	I			
Standard value	0.3	1.1	0.5	2.3	2	0.5	0.5	0.4	1	Zone	Standard	
Floor 4 W - 4th - Rooms	-	-	-	-	0.9	-	-	-	-	0.85	N/A	
Floor 4 W - 4th - Circ	-	-	-	-	0.9	-	-	-	-	0.85	N/A	
Floor 4 E - 4th - Circ 1	-	-	-	-	0.9	-	-	-	-	0.85	N/A	
Floor 4 E - 4th - Rooms	-	-	-	-	0.9	-	-	-	-	0.85	N/A	

General lighting and display lighting		General luminaire		Display light source	
Zone name		Efficacy [lm/W]		Efficacy [lm/W] Power density [W/m²]	
Standard value		95		80 0.3	
Floor 0 - Plant		130		- -	
Floor 0 - Storage		130		- -	
Floor 0 - Plant		130		- -	
Floor 3 E - 3rd - Cleaners		130		- -	
Floor 4 E - 4th - Cleaners		130		- -	
Floor 0 - Circ		130		- -	
Floor 0 - Rooms		130		- -	
Floor 0 - Reception		130		100 1.35	
Floor 0 - Office		130		- -	
Floor 0 - WC		130		- -	
Floor 1 - 1st - Rooms		130		- -	
Floor 1 - 1st - Circ		130		- -	
Floor 2 - 2nd - Rooms		130		- -	
Floor 2 - 2nd - Circ		130		- -	
Floor 3 W - 3rd - Rooms		130		- -	
Floor 3 W - 3rd - Circ		130		- -	
Floor 3 E - 3rd - Rooms		130		- -	
Floor 3 E - 3rd - Circ		130		- -	
Floor 4 W - 4th - Rooms		130		- -	
Floor 4 W - 4th - Circ		130		- -	
Floor 4 E - 4th - Circ 1		130		- -	
Floor 4 E - 4th - Rooms		130		- -	

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?
Floor 0 - Circ	NO (-89.3%)	NO
Floor 0 - Rooms	NO (-52.4%)	NO
Floor 0 - Reception	YES (+37.6%)	NO
Floor 0 - Office	YES (+12.4%)	NO
Floor 0 - WC	N/A	N/A
Floor 1 - 1st - Rooms	NO (-59%)	NO
Floor 1 - 1st - Circ	N/A	N/A
Floor 2 - 2nd - Rooms	NO (-59%)	NO
Floor 2 - 2nd - Circ	N/A	N/A

Zone	Solar gain limit exceeded? (%)	Internal blinds used?
Floor 3 W - 3rd - Rooms	NO (-72.7%)	NO
Floor 3 W - 3rd - Circ	N/A	N/A
Floor 3 E - 3rd - Rooms	NO (-57.3%)	NO
Floor 3 E - 3rd - Circ	N/A	N/A
Floor 4 W - 4th - Rooms	NO (-72.7%)	NO
Floor 4 W - 4th - Circ	N/A	N/A
Floor 4 E - 4th - Circ 1	N/A	N/A
Floor 4 E - 4th - Rooms	NO (-59.5%)	NO

Regulation 25A: Consideration of high efficiency alternative energy systems

Were alternative energy systems considered and analysed as part of the design process?	NO
Is evidence of such assessment available as a separate submission?	NO
Are any such measures included in the proposed design?	NO

Technical Data Sheet (Actual vs. Notional Building)

Building Global Parameters

	Actual	Notional
Floor area [m ²]	3457	3457
External area [m ²]	4463.1	4463.1
Weather	LON	LON
Infiltration [m ³ /hm ² @ 50Pa]	3	3
Average conductance [W/K]	1040.86	1759.2
Average U-value [W/m ² K]	0.23	0.39
Alpha value* [%]	30.78	21.86

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

Building Use

% Area Building Type

Retail/Financial and Professional Services
 Restaurants and Cafes/Drinking Establishments/Takeaways
 Offices and Workshop Businesses
 General Industrial and Special Industrial Groups
 Storage or Distribution

100 Hotels

Residential Institutions: Hospitals and Care Homes
 Residential Institutions: Residential Schools
 Residential Institutions: Universities and Colleges
 Secure Residential Institutions
 Residential Spaces
 Non-residential Institutions: Community/Day Centre
 Non-residential Institutions: Libraries, Museums, and Galleries
 Non-residential Institutions: Education
 Non-residential Institutions: Primary Health Care Building
 Non-residential Institutions: Crown and County Courts
 General Assembly and Leisure, Night Clubs, and Theatres
 Others: Passenger Terminals
 Others: Emergency Services
 Others: Miscellaneous 24hr Activities
 Others: Car Parks 24 hrs
 Others: Stand Alone Utility Block

Energy Consumption by End Use [kWh/m²]

	Actual	Notional
Heating	3.4	7.58
Cooling	4.04	3.5
Auxiliary	7.35	6.24
Lighting	4.61	4.47
Hot water	37.96	70.23
Equipment*	17.96	17.96
TOTAL**	57.35	92.02

* 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	0.8
Wind turbines	0	0
CHP generators	0	0
Solar thermal systems	0	0
<i>Displaced electricity</i>	<i>0</i>	<i>0.8</i>

Energy & CO₂ Emissions Summary

	Actual	Notional
Heating + cooling demand [MJ/m ²]	130.61	161.76
Primary energy [kWh _{PE} /m ²]	86.79	134.88
Total emissions [kg/m ²]	7.96	12.43

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] No Heating or Cooling										
	Actual	102.9	662.8	0	0	0	0	0	0	0
	Notional	97.6	668.2	0	0	0	0	----	----	----
[ST] Split or multi-split system, [HS] ASHP, [HFT] Electricity, [CFT] Electricity										
	Actual	33.8	67	3.6	4.2	7.6	2.64	4.4	2.69	5.89
	Notional	75.5	58	7.9	3.7	6	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