

## Project name

Vine Lane (Be Green)

As designed

Date: Tue Apr 25 13:15:22 2023

## Administrative information

## Building Details

Address: Address 1, City, Postcode

## Certifier details

Name: Name

Telephone number:

Address: Address, City, Postcode

## Certification tool

Calculation engine: Apache

Calculation engine version: 7.0.19

Interface to calculation engine: IES Virtual Environment

Interface to calculation engine version: 7.0.19

BRUKL compliance module version: v6.1.e.0

Foundation area [m<sup>2</sup>]: 82.55The CO<sub>2</sub> emission and primary energy rates of the building must not exceed the targets

Target CO <sub>2</sub> emission rate (TER), kgCO <sub>2</sub> /m <sup>2</sup> annum	2.92
Building CO <sub>2</sub> emission rate (BER), kgCO <sub>2</sub> /m <sup>2</sup> annum	2.19
Target primary energy rate (TPER), kWh <sub>PE</sub> /m <sup>2</sup> annum	31.42
Building primary energy rate (BPER), kWh <sub>PE</sub> /m <sup>2</sup> annum	23.51
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 <sub>a</sub> -Limit	U <sub>a</sub> -Calc	U <sub>i</sub> -Calc	First surface with maximum value
Walls*	0.26	0.15	0.15	G_000000:Surf[2]
Floors	0.18	0.12	0.12	G_000000:Surf[0]
Pitched roofs	0.16	-	-	No pitched roofs in building
Flat roofs	0.18	0.12	0.12	G_000000:Surf[1]
Windows** and roof windows	1.6	1.27	1.5	G_000002:Surf[16]
Rooflights***	2.2	-	-	No roof lights in building
Personnel doors <sup>^</sup>	1.6	1.5	1.5	G_000003:Surf[3]
Vehicle access & similar large doors	1.3	-	-	No vehicle access doors in building
High usage entrance doors	3	1.5	1.5	G_000002:Surf[16]

U<sub>a</sub>-Limit = Limiting area-weighted average U-values [W/(m<sup>2</sup>K)]  
U<sub>a</sub>-Calc = Calculated area-weighted average U-values [W/(m<sup>2</sup>K)]  
U<sub>i</sub>-Calc = Calculated maximum individual element U-values [W/(m<sup>2</sup>K)]

\* 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.  
<sup>^</sup> For fire doors, limiting U-value is 1.8 W/m<sup>2</sup>K  
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 <sup>3</sup> /(h.m <sup>2</sup> ) 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	>0.95

### 1- VRF Retail

	Heating efficiency	Cooling efficiency	Radiant efficiency	SFP [W/(l/s)]	HR efficiency
<b>This system</b>	3.5	4	0	1.1	0.9
<b>Standard value</b>	2.5*	N/A	N/A	2^	N/A
<b>Automatic monitoring &amp; targeting with alarms for out-of-range values for this HVAC system</b>					NO
* 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- DHW

	Water heating efficiency	Storage loss factor [kWh/litre per day]
<b>This building</b>	1	-
<b>Standard value</b>	1	N/A

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

Zone name	General luminaire	Display light source	
	Efficacy [lm/W]	Efficacy [lm/W]	Power density [W/m <sup>2</sup> ]
<b>Standard value</b>	95	80	0.3
UKPN SUBSTATION	110	-	-
ENTRANCE LOBBY/BASEMENT FIRE ESCAPE	110	-	-
RETAIL FLEXIBLE CLASS E	110	80	1.5
LOBBY	110	-	-
RETAIL FLEXIBLE CLASS E	110	80	1.5
LIFT LOBBY	110	-	-
RESIDENTIAL STAIRS LOBBY	110	-	-
RETAIL FLEXIBLE CLASS E	110	80	1.5
RETAIL FLEXIBLE CLASS E	110	80	1.5
RESIDENTIAL CYCLE STORE	140	-	-
RESIDENTIAL ENTRANCE LOBBY	110	-	-
REFUSE STORE	110	-	-

**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?
RETAIL FLEXIBLE CLASS E	NO (-62.4%)	NO
RETAIL FLEXIBLE CLASS E	NO (-31.3%)	NO
RETAIL FLEXIBLE CLASS E	NO (-75.5%)	NO
RETAIL FLEXIBLE CLASS E	NO (-45.3%)	NO

**Regulation 25A: Consideration of high efficiency alternative energy systems**

Were alternative energy systems considered and analysed as part of the design process?	YES
Is evidence of such assessment available as a separate submission?	YES
Are any such measures included in the proposed design?	YES

# Technical Data Sheet (Actual vs. Notional Building)

## Building Global Parameters

	Actual	Notional
Floor area [m <sup>2</sup> ]	582.5	582.5
External area [m <sup>2</sup> ]	1380.1	1380.1
Weather	LON	LON
Infiltration [m <sup>3</sup> /hm <sup>2</sup> @ 50Pa]	3	3
Average conductance [W/K]	331.61	403.78
Average U-value [W/m <sup>2</sup> K]	0.24	0.29
Alpha value* [%]	26.77	10

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

## Building Use

% Area	Building Type
<b>80</b>	<b>Retail/Financial and Professional Services</b> 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
<b>20</b>	<b>Residential Spaces</b> Non-residential Institutions: Community/Day Centre Non-residential Institutions: Libraries, Museums, and Galleries Non-residential Institutions: Education Non-residential Institutions: Primary Health Care Building Non-residential Institutions: Crown and County Courts General Assembly and Leisure, Night Clubs, and Theatres Others: Passenger Terminals Others: Emergency Services Others: Miscellaneous 24hr Activities Others: Car Parks 24 hrs Others: Stand Alone Utility Block

## Energy Consumption by End Use [kWh/m<sup>2</sup>]

	Actual	Notional
Heating	3.42	3.7
Cooling	1.12	0.67
Auxiliary	2.93	4.48
Lighting	7.38	11.37
Hot water	0.96	0.91
Equipment*	41.13	41.13
<b>TOTAL**</b>	<b>15.81</b>	<b>21.13</b>

\* Energy used by equipment does not count towards the total for consumption or calculating emissions.

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

## Energy Production by Technology [kWh/m<sup>2</sup>]

	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 & CO<sub>2</sub> Emissions Summary

	Actual	Notional
Heating + cooling demand [MJ/m <sup>2</sup> ]	51.44	43.83
Primary energy [kWh <sub>PE</sub> /m <sup>2</sup> ]	23.51	31.42
Total emissions [kg/m <sup>2</sup> ]	2.19	2.92

## 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
<b>[ST] Variable refrigerant flow, [HS] ASHP, [HFT] Electricity, [CFT] Electricity</b>									
<b>Actual</b>	71.8	19	6	2	5.2	3.31	2.65	3.5	4
<b>Notional</b>	65.2	12.1	6.5	1.2	7.9	2.78	2.84	----	----
<b>[ST] No Heating or Cooling</b>									
<b>Actual</b>	0	0	0	0	0	0	0	0	0
<b>Notional</b>	0	0	0	0	0	0	0	----	----

### Key to terms

Heat dem [MJ/m2]	= Heating energy demand
Cool dem [MJ/m2]	= Cooling energy demand
Heat con [kWh/m2]	= Heating energy consumption
Cool con [kWh/m2]	= Cooling energy consumption
Aux con [kWh/m2]	= Auxiliary energy consumption
Heat SSEFF	= Heating system seasonal efficiency (for notional building, value depends on activity glazing class)
Cool SSEER	= Cooling system seasonal energy efficiency ratio
Heat gen SSEFF	= Heating generator seasonal efficiency
Cool gen SSEER	= Cooling generator seasonal energy efficiency ratio
ST	= System type
HS	= Heat source
HFT	= Heating fuel type
CFT	= Cooling fuel type