

## Project name

**BE GREEN - Additional floor**

As designed

Date: Fri May 10 10:41:39 2024

## Administrative information

## Building Details

**Address:** Imperial House, 64 Willoughby Lane, Haringey, London, N17 0SP

## Certifier details

**Name:** Jonathan Southworth**Telephone number:** 01892315466**Address:** 4 St John's Road, Tunbridge Wells Kent, TN4 9NP

## Certification tool

**Calculation engine:** SBEM**Calculation engine version:** v6.1.e.0**Interface to calculation engine:** DesignBuilder SBEM**Interface to calculation engine version:** v7.2.0**BRUKL compliance module version:** v6.1.e.1Foundation area [m<sup>2</sup>]: 353.23The 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   | 3.16                    |
| Building CO <sub>2</sub> emission rate (BER), kgCO <sub>2</sub> /m <sup>2</sup> annum | 0.72                    |
| Target primary energy rate (TPER), kWh <sub>PE</sub> /m <sup>2</sup> annum            | 33.68                   |
| Building primary energy rate (BPER), kWh <sub>PE</sub> /m <sup>2</sup> annum          | 6.5                     |
| 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-Limit</sub> | U <sub>a-Calc</sub> | U <sub>i-Calc</sub> | First surface with maximum value      |
|--------------------------------------|----------------------|---------------------|---------------------|---------------------------------------|
| Walls*                               | 0.26                 | 0.15                | 0.15                | Block 1 - Circulation_W_6             |
| Floors                               | 0.18                 | -                   | -                   | No heat loss floors                   |
| Pitched roofs                        | 0.16                 | -                   | -                   | No heat loss pitched roofs            |
| Flat roofs                           | 0.18                 | 0.11                | 0.11                | Block 1 - Circulation_R_4             |
| Windows** and roof windows           | 1.6                  | 1.2                 | 1.2                 | Block 1 - Circulation_G_8             |
| Rooflights***                        | 2.2                  | -                   | -                   | No external rooflights                |
| Personnel doors^                     | 1.6                  | 1.2                 | 1.2                 | Block 1 - Office_D_8                  |
| Vehicle access & similar large doors | 1.3                  | -                   | -                   | No external vehicle access doors      |
| High usage entrance doors            | 3                    | -                   | -                   | No external high usage entrance doors |

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

^ 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                     | <0.9 |

### 1- ASHP

|                                                                                               | Heating efficiency | Cooling efficiency | Radiant efficiency | SFP [W/(l/s)] | HR efficiency |
|-----------------------------------------------------------------------------------------------|--------------------|--------------------|--------------------|---------------|---------------|
| This system                                                                                   | 4.5                | 6                  | -                  | -             | -             |
| 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     |                    |                    |                    |               | NO            |
| * Standard shown is for all types >12 kW output, except absorption and gas engine heat pumps. |                    |                    |                    |               |               |

### 1- Electric DHW

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

"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/m <sup>2</sup> ] |
| Standard value                        | 95                | 80                   | 0.3                               |
| Block 1 - Circulation                 | 130               | -                    | -                                 |
| Block 1 - Office                      | 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? |
|-----------------------|--------------------------------|-----------------------|
| Block 1 - Circulation | NO (-38.2%)                    | NO                    |
| Block 1 - Office      | NO (-37.8%)                    | 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> ]                          | 353.2  | 353.2    |
| External area [m <sup>2</sup> ]                       | 643.9  | 643.9    |
| Weather                                               | LON    | LON      |
| Infiltration [m <sup>3</sup> /hm <sup>2</sup> @ 50Pa] | 3      | 3        |
| Average conductance [W/K]                             | 161.32 | 231.23   |
| Average U-value [W/m <sup>2</sup> K]                  | 0.25   | 0.36     |
| Alpha value* [%]                                      | 19.91  | 20.52    |

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

## Building Use

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

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

|                 | Actual       | Notional     |
|-----------------|--------------|--------------|
| Heating         | 3.93         | 9.1          |
| Cooling         | 4.25         | 5.61         |
| Auxiliary       | 0            | 0            |
| Lighting        | 3.79         | 5.15         |
| Hot water       | 2.71         | 2.71         |
| Equipment*      | 40           | 40           |
| <b>TOTAL **</b> | <b>14.68</b> | <b>22.58</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         | 10.87        | 0        |
| Wind turbines                | 0            | 0        |
| CHP generators               | 0            | 0        |
| Solar thermal systems        | 0            | 0        |
| <i>Displaced electricity</i> | <i>10.87</i> | <i>0</i> |

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

|                                                     | Actual | Notional |
|-----------------------------------------------------|--------|----------|
| Heating + cooling demand [MJ/m <sup>2</sup> ]       | 124.48 | 141.06   |
| Primary energy [kWh <sub>PE</sub> /m <sup>2</sup> ] | 6.5    | 33.68    |
| Total emissions [kg/m <sup>2</sup> ]                | 0.72   | 3.16     |

## HVAC Systems Performance

| System Type                                                                       | Heat dem<br>MJ/m2 | Cool dem<br>MJ/m2 | Heat con<br>kWh/m2 | Cool con<br>kWh/m2 | Aux con<br>kWh/m2 | Heat<br>SSEFF | Cool<br>SSEER | Heat gen<br>SEFF | Cool gen<br>SEER |
|-----------------------------------------------------------------------------------|-------------------|-------------------|--------------------|--------------------|-------------------|---------------|---------------|------------------|------------------|
| [ST] Split or multi-split system, [HS] ASHP, [HFT] Electricity, [CFT] Electricity |                   |                   |                    |                    |                   |               |               |                  |                  |
| Actual                                                                            | 59.3              | 65.1              | 3.9                | 4.2                | 0                 | 4.19          | 4.26          | 4.5              | 6                |
| Notional                                                                          | 86.5              | 54.6              | 9.1                | 5.6                | 0                 | 2.64          | 2.7           | ----             | ----             |

### 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                                                                                   |