

## Project name

**MSC****As designed**

Date: Mon Apr 28 16:14:14 2025

## Administrative information

## Building Details

Address: LONDON, N6 4AY

## Certifier details

Name:

Telephone number:

Address: , ,

## 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 [m<sup>2</sup>]: 658.98The 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   | 3.36                    |
| Building CO <sub>2</sub> emission rate (BER), kgCO <sub>2</sub> /m <sup>2</sup> annum | 1.3                     |
| Target primary energy rate (TPER), kWh <sub>PE</sub> /m <sup>2</sup> annum            | 35.13                   |
| Building primary energy rate (BPER), kWh <sub>PE</sub> /m <sup>2</sup> annum          | 11.77                   |
| 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                 | 0.3                  | 3. SF MZ CAFE - MAZ CAFE_W_7          |
| Floors                               | 0.18                  | 0.11                 | 0.14                 | 1. GF CORR N - STAIR 2_F_3            |
| Pitched roofs                        | 0.16                  | -                    | -                    | No heat loss pitched roofs            |
| Flat roofs                           | 0.18                  | 0.12                 | 0.12                 | 0. LGF SP HALL 2 - SPORTS HALL 2_R_4  |
| Windows** and roof windows           | 1.6                   | 1.4                  | 1.4                  | 2. FF CORR W - FF CORR M_G_10         |
| Rooflights***                        | 2.2                   | 1.7                  | 1.7                  | 0. LGF SP HALL 2 - SPORTS HALL 2_G_5  |
| Personnel doors^                     | 1.6                   | 1.5                  | 1.5                  | 1. GF CORR N - STAIR 2_D_31           |
| 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</sub>-Limit = Limiting 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)]U<sub>a</sub>-Calc = 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 | YES  |
| Whole building electric power factor achieved by power factor correction                     | <0.9 |

### 1- Dry Sport Hall Warm air heating

|                                                                                                                                        | Heating efficiency | Cooling efficiency | Radiant efficiency | SFP [W/(l/s)] | HR efficiency |
|----------------------------------------------------------------------------------------------------------------------------------------|--------------------|--------------------|--------------------|---------------|---------------|
| This system                                                                                                                            | 3.5                | -                  | -                  | 1.4           | 0.85          |
| Standard value                                                                                                                         | 2.5*               | N/A                | N/A                | 1.9^          | 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. |                    |                    |                    |               |               |

### 2- Heat Pump with UFH

|                                                                                               | Heating efficiency | Cooling efficiency | Radiant efficiency | SFP [W/(l/s)] | HR efficiency |
|-----------------------------------------------------------------------------------------------|--------------------|--------------------|--------------------|---------------|---------------|
| This system                                                                                   | 3.8                | -                  | -                  | -             | -             |
| Standard value                                                                                | 2.5*               | N/A                | 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. |                    |                    |                    |               |               |

### 3- VRF with Fan coil

|                                                                                               | Heating efficiency | Cooling efficiency | Radiant efficiency | SFP [W/(l/s)] | HR efficiency |
|-----------------------------------------------------------------------------------------------|--------------------|--------------------|--------------------|---------------|---------------|
| This system                                                                                   | 4.5                | 6.5                | -                  | -             | -             |
| 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- DHW from Electric

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

### 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 |   |               |          |
| 0. LGF CORR N - CLNR STORE | -             | -   | -   | -   | 1 | -   | -   | -   | - | - | -             | 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 |
| 1. GF CORR N - WC             | -             | -   | 0.3 | -   | - | -   | -   | -   | - | -             | N/A      |
| 1. GF REST - KITCHEN          | -             | -   | -   | -   | 1 | -   | -   | -   | - | 0.8           | N/A      |
| 2. FF CORR S - VISITOR WC 1   | -             | -   | 0.3 | -   | - | -   | -   | -   | - | -             | N/A      |
| 2. FF CORR S - VISITOR WC 2   | -             | -   | 0.3 | -   | - | -   | -   | -   | - | -             | N/A      |
| 2. FF CORR N - CLASSROOM      | -             | -   | -   | -   | 1 | -   | -   | -   | - | 0.8           | N/A      |
| 2. FF CORR N - IT FACILITY    | -             | -   | -   | -   | 1 | -   | -   | -   | - | 0.8           | N/A      |
| 2. FF CORR S - MAIN FOYER     | -             | -   | -   | -   | 1 | -   | -   | -   | - | 0.8           | N/A      |
| 2. FF CORR S - RECEPTION      | -             | -   | -   | -   | 1 | -   | -   | -   | - | 0.8           | N/A      |
| 2. FF CORR S - OFFICE         | -             | -   | -   | -   | 1 | -   | -   | -   | - | 0.8           | N/A      |
| 2. FF CORR S - CENTRAL OFFICE | -             | -   | -   | -   | 1 | -   | -   | -   | - | 0.8           | N/A      |
| 2. FF GYM M - FF GYM M        | -             | -   | -   | -   | 1 | -   | -   | -   | - | 0.8           | N/A      |
| 3. SF MZ CAFE - MAZ CAFE      | -             | -   | -   | -   | 1 | -   | -   | -   | - | 0.8           | 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                  |
| 1. GF CCF SPORTS - CCF STORES         |                | 95                | -                    | -                    |
| 1. GF CCF SPORTS - PLANT              |                | 95                | -                    | -                    |
| 1. GF RR STR - REFUSE & RECYCLE       |                | 95                | -                    | -                    |
| 1. GF RR STR - PLANT                  |                | 95                | -                    | -                    |
| 0. LGF CORR N - CLNR STORE            |                | 95                | -                    | -                    |
| 0. LGF CORR N - SPORTS STORES         |                | 95                | -                    | -                    |
| 0. LGF CORR S - UNUSED ROOMS          |                | 95                | -                    | -                    |
| 0. LGF CORR S - STORES                |                | 95                | -                    | -                    |
| 1. GF CORR N - PLANT                  |                | 95                | -                    | -                    |
| 1. GF CORR N - CYCLES STORE           |                | 95                | -                    | -                    |
| 1. GF REST - STORES 1                 |                | 95                | -                    | -                    |
| 0. LGF SP HALL 2 - SPORTS HALL 2      |                | 109               | -                    | -                    |
| 1. GF REST - SQUASH COURT 2           |                | 95                | -                    | -                    |
| 1. GF REST - SQUASH COURT 1           |                | 95                | -                    | -                    |
| 2. FF CORR W - FF CORR M              |                | 95                | -                    | -                    |
| 0. LGF CORR N - STAIR 2               |                | 95                | -                    | -                    |
| 0. LGF CORR N - STAIR 1               |                | 95                | -                    | -                    |
| 0. LGF CORR S - LOBBY & STAIRS        |                | 95                | -                    | -                    |
| 0. LGF CORR S - STAIR 1               |                | 95                | -                    | -                    |
| 1. GF CORR N - STAIR 2                |                | 95                | -                    | -                    |
| 1. GF CORR N - WC                     |                | 95                | -                    | -                    |
| 1. GF CORR N - STAIR 1                |                | 95                | -                    | -                    |
| 2. FF CORR N - STAIR 2                |                | 95                | -                    | -                    |
| 2. FF CORR N - STAIR 1                |                | 95                | -                    | -                    |
| 1. GF REST - CORR 1                   |                | 95                | -                    | -                    |
| 1. GF REST - KITCHEN                  |                | 95                | -                    | -                    |
| 2. FF CORR S - CIRR                   |                | 95                | -                    | -                    |

| 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                               |
| 2. FF CORR S - LOBBY & STAIR          |                | 95                | -                    | -                                 |
| 2. FF CORR S - VISITOR WC 1           |                | 95                | -                    | -                                 |
| 2. FF CORR S - VISITOR WC 2           |                | 95                | -                    | -                                 |
| 3. SF CORR N - STAIR                  |                | 95                | -                    | -                                 |
| 3. SF MZ CAFE - STAIR                 |                | 95                | -                    | -                                 |
| 3. SF CORR W - MEZZANINE STUDIO       |                | 95                | -                    | -                                 |
| 2. FF CORR N - CLASSROOM              |                | 95                | -                    | -                                 |
| 2. FF CORR N - IT FACILITY            |                | 95                | -                    | -                                 |
| 2. FF CORR S - MAIN FOYER             |                | 95                | -                    | -                                 |
| 2. FF CORR S - RECEPTION              |                | 95                | -                    | -                                 |
| 2. FF CORR S - OFFICE                 |                | 95                | -                    | -                                 |
| 2. FF CORR S - CENTRAL OFFICE         |                | 95                | -                    | -                                 |
| 2. FF GYM M - FF GYM M                |                | 95                | -                    | -                                 |
| 3. SF MZ CAFE - MAZ CAFE              |                | 95                | -                    | -                                 |

**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? |
|----------------------------------|--------------------------------|-----------------------|
| 0. LGF SP HALL 2 - SPORTS HALL 2 | NO (-97.5%)                    | YES                   |
| 1. GF REST - SQUASH COURT 2      | N/A                            | N/A                   |
| 1. GF REST - SQUASH COURT 1      | N/A                            | N/A                   |
| 3. SF CORR N - STAIR             | N/A                            | N/A                   |
| 3. SF CORR W - MEZZANINE STUDIO  | NO (-78%)                      | NO                    |
| 2. FF CORR N - CLASSROOM         | NO (-38.7%)                    | NO                    |
| 2. FF CORR N - IT FACILITY       | NO (-26.4%)                    | NO                    |
| 2. FF CORR S - MAIN FOYER        | N/A                            | N/A                   |
| 2. FF CORR S - RECEPTION         | N/A                            | N/A                   |
| 2. FF CORR S - OFFICE            | N/A                            | N/A                   |
| 2. FF CORR S - CENTRAL OFFICE    | N/A                            | N/A                   |
| 2. FF GYM M - FF GYM M           | NO (-17.6%)                    | NO                    |
| 3. SF MZ CAFE - MAZ CAFE         | NO (-86.8%)                    | 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 <sup>2</sup> ]                          | 2635.9  | 2635.9   |
| External area [m <sup>2</sup> ]                       | 7276.5  | 7276.5   |
| Weather                                               | LON     | LON      |
| Infiltration [m <sup>3</sup> /hm <sup>2</sup> @ 50Pa] | 3       | 4        |
| Average conductance [W/K]                             | 1236.27 | 2205.73  |
| Average U-value [W/m <sup>2</sup> K]                  | 0.17    | 0.3      |
| Alpha value* [%]                                      | 15.63   | 26.05    |

\* 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  
 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

100

### 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         | 2.7          | 7.03         |
| Cooling         | 0.73         | 0.75         |
| Auxiliary       | 3.67         | 2.94         |
| Lighting        | 7.94         | 5.15         |
| Hot water       | 11.8         | 11.8         |
| Equipment*      | 16.96        | 16.96        |
| <b>TOTAL **</b> | <b>26.83</b> | <b>27.67</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         | 19.94        | 4.28        |
| Wind turbines                | 0            | 0           |
| CHP generators               | 0            | 0           |
| Solar thermal systems        | 0            | 0           |
| <i>Displaced electricity</i> | <i>19.94</i> | <i>4.28</i> |

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

|                                                     | Actual | Notional |
|-----------------------------------------------------|--------|----------|
| Heating + cooling demand [MJ/m <sup>2</sup> ]       | 102.79 | 156.03   |
| Primary energy [kWh <sub>PE</sub> /m <sup>2</sup> ] | 11.77  | 35.13    |
| Total emissions [kg/m <sup>2</sup> ]                | 1.3    | 3.36     |

| 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>SSEEF | Cool<br>SSEER | Heat gen<br>SEFF | Cool gen<br>SEER |      |
| [ST] No Heating or Cooling                                                                       |                   |                   |                    |                    |                   |               |               |                  |                  |      |
|                                                                                                  | Actual            | 143.8             | 149.5              | 0                  | 0                 | 0.1           | 0             | 0                | 0                | 0    |
|                                                                                                  | Notional          | 151.7             | 150.6              | 0                  | 0                 | 0.1           | 0             | 0                | ----             | ---- |
| [ST] Central heating using air distribution, [HS] ASHP, [HFT] Electricity, [CFT] Natural Gas     |                   |                   |                    |                    |                   |               |               |                  |                  |      |
|                                                                                                  | Actual            | 24.3              | 9                  | 1.8                | 0                 | 6.6           | 3.85          | 0                | 3.5              | 0    |
|                                                                                                  | Notional          | 73.1              | 47.3               | 7.7                | 0                 | 5.6           | 2.64          | 0                | ----             | ---- |
| [ST] Central heating using water: floor heating, [HS] ASHP, [HFT] Electricity, [CFT] Natural Gas |                   |                   |                    |                    |                   |               |               |                  |                  |      |
|                                                                                                  | Actual            | 71.5              | 32.2               | 5.6                | 0                 | 1.5           | 3.57          | 0                | 3.8              | 0    |
|                                                                                                  | Notional          | 86.8              | 57.2               | 9.1                | 0                 | 1.7           | 2.64          | 0                | ----             | ---- |
| [ST] Split or multi-split system, [HS] ASHP, [HFT] Electricity, [CFT] Electricity                |                   |                   |                    |                    |                   |               |               |                  |                  |      |
|                                                                                                  | Actual            | 34.9              | 62.3               | 2.3                | 3.7               | 3.8           | 4.19          | 4.62             | 4.5              | 6.5  |
|                                                                                                  | Notional          | 74.2              | 61.6               | 7.8                | 3.9               | 1.7           | 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                                                                                   |