SUSTAINABILITY & ENERGY STATEMENT

Proposed new commercial units at:
6-8 Emery Road ,Brislington, Bristol BS4 5BF

Statement and Part LA calculations prepared by:
[redacted]

1/ Introduction

The aim of this Energy Statement is to demonstrate compliance with the requirements of Bristol Development Framework Core Strategy - Policies BCS 13-16 as applicable.
In respect of each of the issues in BCS 13-16, this Sustainability Statement sets out what possible measures have been explored, which measures have been adopted and integrated into the design and, where relevant, why it was not feasible to incorporate certain measures into the proposed development.

The proposed is the addition of 5 commercial units, 4 units in one new block, and a further unit added to an existing building at 6-8 Emery Road, Brislington, Bristol BS4 5BF.
This Statement and calculations have been completed in line with Part L 2021 and the requirements of the BCS as above.

Please refer to the Application drawings submitted with the planning application.

2/ Building Regulations

No Building Regulations submission has been made in respect of the proposed development.
Important Notice:
This Statement and accompanying SBEM calculations are for the purpose of a Planning Application ONLY and must not be used for Building Regulations purposes. We accept no responsibility for errors arising if these calculations and statement content is used for Building Regulations compliance.

Part L Calculation – Methodology

The building was assessed using SBEM to establish a baseline energy use and CO2 emissions, the Notional Building, and to determine the same for the Proposed Building. The Proposed must be lower than the Notional to demonstrate a pass. In addition, to satisfy BCS requirements, normally a minimum of 20% additional CO2 savings should be met through on-site renewables.

SBEM was also used to calculate the additional 20% reduction from on-site renewables.

3/ BSC13 – Climate Change

Requires the development to both mitigate and adapt to climate change.
Renewables
An ASHP is proposed for all heating requirements.

EV charging
EV charging may be included in the proposed.

Ventilation
The ventilation strategy for the building is Natural with openable roof windows for summer cross ventilation.

Heat Network
The proposed site is outside of the city heat networks.

Urban Heat Island
In terms of green space and reducing urban heat islands, the existing site does not have its own green space.

CO2 emissions in the building will improve upon the minimum requirements of the Building Regulations.

4/ Bristol Development Framework Core Strategy

BSC14 – Sustainable Energy
Provides criteria for assessing new renewable energy schemes. Requires new development to minimise its energy requirements and then incorporate an element of renewable energy to reduce its CO2 emissions by a further 20%.

The following hierarchy has been adopted.
1. Minimising energy requirements.
2. Incorporating renewable energy sources.
3. Incorporating low-carbon energy sources

Orientation
The proposed buildings are as the existing site constraints and are orientated on a N/S axis, making use of the current site boundaries.

Thermal Elements
All new thermal elements will be insulated to exceed current Regulations.
New cavity wall will be a u value of 0.15, new MCS wall at 0.13

The roof is of an insulated Metal cladding system with a u value of 0.12.

The new ground floor will have a u value of 0.20.

Doors and windows will be double glazed with a u value of 1.4

Cargo doors a u value of 1.5

Rooflights will have a u value of 1.0

Daylight
There is adequate daylight into the buildings via the proposed windows and doors.

Solar Shading
Additional solar shading is not required, no overheating risk has been identified.

Thermal Bridges
The new thermal elements will be designed to mitigate thermal bridges.

Air Tightness
The building is targeted to have an air test to achieve 5

Selection of heating systems
Heating and cooling systems are selected in accordance with the heat hierarchy set out in policy BCS14.

Combined heat and power
CHP requires substantial demand for heat and appropriate demand for power to be viable and in this building this would not be so.

District Heating
Policy BCS14 requires that within Heat Priority Areas (as identified in the Core Strategy), major developments connect to existing heat networks where available. Where a network is not available major developments within Heat Priority Areas should incorporate infrastructure to connect to district heating networks in the future where feasible.

The proposed is not within any of the existing or planned city centre district heating networks although it is within the heat priority area. The development is under 1000m2 TFA.

Mechanical & Electrical Services
The proposed heating is by an ASHP.

Hot water will be instant electric hot water unit in the wc' s

The heating and hot water will include control systems appropriate to the system.

Ventilation will be natural ventilation via openable roof windows.

Lighting is 100% LED low energy at 140 lumens per circuit Watts.

See Appendix 1 – Standard Template for Energy Strategies for further details of energy and co2 emissions reduction.

Renewable Energy
Air Source Heat Pump
A heat pump With a SCOP of 4.0/SEER 4.5 is proposed for each unit.

Solar Thermal and Solar PV
Solar thermal is possible however with limited water use for occupational requirements it would be of limited use. A solar PV system is proposed for each unit, of 0.75kWp.

Biomass
A biomass boiler is not practical for this small size of house due to fuel storage considerations.

Wind
A wind turbine would not be appropriate for this building to due to the possible turbulence experience din an urban environment, and the ack of an appropriate average annual wind speed.

Allowable Solutions
There are no further technologies considered to contribute from allowable solutions.

5/ BSC15 – Sustainable Design and Construction
Requires all development to engage with issues around sustainable design and construction.

Waste and recycling
The proposed will have internal/external waste & recycling provision.

If required, there will be a Construction Site Waste Management plan followed during construction work, and recycling of materials identified and reused where possible. Demolition of existing structures are mainly internal divisions and the existing roof.

A policy of monitoring and diverting from landfill will be adopted throughout the construction period. There is adequate site space to store materials before disposal.

Water
There will be low flush toilets, with an internal water use target of 105 ltrs/pp/day.

Materials
All new Materials will be Green Guide Rated.

Flexibility and adaptability
The proposed building will already be suitable non ambient persons.

Green Infrastructure
Biodiversity -There may be some ecological value to the existing site, however, a survey has not been undertaken.

Surface water run-off will be managed by appropriately designed rainwater attenuation.

Green or brown roofs are not a possibility on the type of roof proposed.
Bird and bat boxes, where appropriate may be mounted to the rear of the property.

ICT
The building may require the provision of high-speed broadband access and this may be provided should the final design determine if necessary.

Sustainability Standards
There are no additional standards sought.

6/ BSC16 – Flood Risk and Water Management
Principally addresses the issues around development in a flood risk area but also require all development to include water management measures to reduce surface water run-off.

According to the Gov.uk website there is a very low risk of flooding from surface water and rivers

[redacted]

[redacted]

13/08/25

Summary Table

4.1.1. No district Heat connection - Totals from ALL 5 Buildings

The summary table should be supported by a written explanation of the measures proposed and a full set of calculations as set out under "Detailed Measures" below. Where relevant, the proposed measures should also be shown on the application drawings.

	Regulated Energy Demand (MWhr/yr)	**Regulated CO2 emissions (tonnes/yr)**	**CO2 saved (tonnes/yr)**	**% CO2 reduction**
Baseline Part L TER	67.196	10.181		
Proposed scheme after energy efficiency measures	58.05	8.829	1.35	**13.2%**
Residual Emissions Proposed scheme after energy efficiency measures and CHP (if using)	n/a	n/a	n/a	n/a
Proposed scheme after on site renewables (PV only)	58.03	6.885	1.944	**20%**
Total CO2 reduction beyond Part TER			3.29	**32.3%**

4.2.2 Non-residential energy efficiency table Totals from ALL 5 Buildings

	Notional	**Building**	**Proposed**	**Building**
	Energy Consumption	**Fuel Type**	**Energy Consumption**	**Fuel Type**
Heating (MWh/yr)	31.005	electricity	14.26	electricity
Hot Water (MWh/yr)	0.534	electricity	0.534	electricity
Cooling (MWh/yr)	7.079	electricity	14.83	electricity
Auxiliary(MWh/yr)	1.179	electricity	0.89	electricity
Lighting (MWh/yr)	27.399	electricity	27.54	electricity
Total (MWh/yr)	67.196	electricity	58.05	electricity
Total per GIA (kWh/m2/yr)	139.89	electricity	120.43	electricity

4.2.3 Energy efficiency measures

Provide a summary table of U values taken from the SAP /SBEM calculations:

	Part L Values (2021)

Element or System	**Non Dwellings New**	**Proposed New**

Wall	0.26	0.13/0.15
Roof	0.16/0.18	0.12
Floor	0.26	0.20
Windows	1.6	1.4
Rooflights	2.2	1.0
Pedestrian Door	1.6	1.4
Cargo Door	1.2	1.5

Provide a description of the proposed heating system unless it is CHP, connection to district heating or renewable.

The proposed model of ASHP is to be confirmed.

4.2.5 On-site renewables

Set out what renewable energy sources have been incorporated into the proposed development and the resulting estimated annual yield (kWh).
This can include emission savings from the use of renewable fuels to power CHP.

Renewable electricity – enter the total installed capacity (kW)	3.75
Renewable electricity – enter the estimated annual yield (kWh) from renewable. measures generating electricity. (Where available apply recognised standard methodologies such as the Microgeneration Certification Scheme (MCS) methodology for Solar PV)	2905
Renewable heat – enter the total installed capacity (kW)	tbc
Renewable heat – enter the estimated annual yield (kWh) from renewable. measures generating heat	2879

4.2.6 Allowable solutions

Where the full requirements of policy BCS14 cannot feasibly delivered on-site, and an alternative approach has been agreed with the planning authority, set out any further savings that will be achieved together with a description of the agreed allowable solution.

Additional saving on residual emissions from allowable solutions (kgCO2 pa)	n/a
Total savings on residual emissions from renewables and allowable solutions (%)	n/a

[redacted]

13/08/25

SBEM reports for the proposed, and proposed with renewables (For BER/TER CO2 emissions and kWh figures only – For planning purposes only, NOT to be used for Building Regs compliance)

BRUKL Output Document

HM Government

Compliance with England Building Regulations Part L 2021

Project name

6320-SUST-DBS-EMERY ROAD 1 PV

As designed

Date: Tue Aug 12 08:37:17 2025

Administrative information

Building Details

Address: UNIT 1, 6-6 EMERY ROAD, BRISLINGTON, BRISTOL, BS4 5PF

Certifier details

Name: [redacted]

Telephone number: 01225 862266

Address: 9 Woolley Drive, Bradford on Avon, BA15 1AU

Certification tool

Calculation engine: SBEM

Calculation engine version: v6.1.e.1

Interface to calculation engine: iSBEM

Interface to calculation engine version: v6.1.e

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

Foundation area [m²]: 52.25

The CO_2 emission and primary energy rates of the building must not exceed the targets

Target CO_2 emission rate (TER), $kgCO_2/m^2$annum	4.21	
Building CO_2 emission rate (BER), $kgCO_2/m^2$annum	2.76	
Target primary energy rate (TPER), kWh_{PE}/m^2annum	44.56	
Building primary energy rate (BPER), kWh_{PE}/m^2annum	29.38	
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	$U_{a\text{-}Limit}$	$U_{a\text{-}Calc}$	$U_{i\text{-}Calc}$	First surface with maximum value
Walls*	0.26	0.14	0.15	Z0/01 WORKSHOP/s
Floors	0.18	0.2	0.2	Z0/01 WORKSHOP/f
Pitched roofs	0.16	-	-	No heat loss pitched roofs
Flat roofs	0.18	0.12	0.12	Z1/01 WC/c
Windows** and roof windows	1.6	1.23	1.4	Z0/01 WORKSHOP/s/g
Rooflights***	2.2	-	-	No external rooflights
Personnel doors^	1.6	-	-	No external personnel doors
Vehicle access & similar large doors	1.3	1.5	1.5	CD
High usage entrance doors	3	-	-	No external high usage entrance doors

$U_{a\text{-}Limit}$ = Limiting area-weighted average U-values [W/(m²K)] $U_{i\text{-}Calc}$ = Calculated maximum individual element U-values [W/(m²K)]

$U_{a\text{-}Calc}$ = 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	5

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- HEATING

	Heating efficiency	Cooling efficiency	Radiant efficiency	SFP [W/(l/s)]	HR efficiency
This system	4	4.5	-	-	-
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- INSTANT HWS

	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		
Standard value	0.3	1.1	0.5	2.3	2	0.5	0.5	0.4	1	Zone	Standard
Z1/01 WC	0.3	-	-	-	-	-	-	-	-	-	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
Z0/01 WORKSHOP	140	-	-
Z1/01 WC	140	-	-
Z1/02 OFFICE	140	-	-

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?
Z0/01 WORKSHOP	NO (-74.8%)	NO
Z1/01 WC	N/A	N/A

Zone	Solar gain limit exceeded? (%)	Internal blinds used?
Z1/02 OFFICE	NO (-42.6%)	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?	NO
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^2]	104.6	104.6
External area [m^2]	229.8	229.8
Weather	CAR	CAR
Infiltration [m^3/hm^2@ 50Pa]	5	4
Average conductance [W/K]	59.86	84.95
Average U-value [W/m^2K]	0.26	0.37
Alpha value* [%]	35.38	52.73

* 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/m^2]

	Actual	Notional
Heating	6.28	14.43
Cooling	5.68	2.92
Auxiliary	0.34	0.45
Lighting	10.51	9.79
Hot water	2.14	2.14
Equipment*	28.77	28.77
TOTAL**	**24.94**	**29.72**

* 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^2]

	Actual	Notional
Photovoltaic systems	5.81	0
Wind turbines	0	0
CHP generators	0	0
Solar thermal systems	0	0
Displaced electricity	*5.81*	*0*

Energy & CO_2 Emissions Summary

	Actual	Notional
Heating + cooling demand [MJ/m^2]	149.58	183.3
Primary energy [kWh_{PE}/m^2]	29.38	44.56
Total emissions [kg/m^2]	2.76	4.21

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] Split or multi-split system, [HS] ASHP, [HFT] Electricity, [CFT] Electricity										
	Actual	84.3	65.3	6.3	5.7	0.3	3.73	3.2	4	4.5
	Notional	137.1	46.2	14.4	2.9	0.4	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

SBEM Data Reflection Report — Actual Building

Date: Tue Aug 12 08:37:16 2025

Project name: 6320-SUST-DBS-EMERY ROAD 1 PV **Building type:** Offices and Workshop businesses **Building area [m2]:** 105

General

Building address	UNIT 1 6-6 EMERY ROAD BRISLINGTON BRISTOL BS4 5PF
Building / Foundation areas [m2]	104.58 / 52.25
Weather	CAR
Building rotation [degrees]	0
Maximum no. of storeys	2

Accredited person/Energy assessor

Name	[redacted]
Telephone number	[redacted]
Address	[redacted]
Email	[redacted]

Analysis

Compliance with	England Building Regulations Part L 2021
Asset rating	None
Stage	As designed
Shell & core building	NO
Modular & portable building	NO
Planned time of use	-
Distress purchase	-
Manufacture date of subassemblies	-

Software

SBEM version	v6.1.e.1
Interface to SBEM	iSBEM
Interface version	v6.1.e

Project building services

Electric power factor	<0.9
Submetering and M&T for lighting systems	NO
Emission factor for district heating [kgCO2/kWh]	0.36
Primary energy factor for district heating [kWhPE/kWh]	1.58
New district heating network	NO

Summary of objects

Object type	Total number	Total related area [m2]
Envelope/Door constructions	8	-
Window/Rooflight constructions	2	-
HW systems	1	-
Shower types	1	-
SE systems	0	0
PV systems	1	1e-005
Wind generators	0	-
CHP generators	0	-
Solar collectors	0	0
HVAC systems	1	-
Zones	3	104.58
Envelopes	23	410.55
Doors	1	7.5
Windows/Rooflights	4	11.42

Envelope/Door constructions

Name	U-value [W/m2K]	Adjusted U-value	Km [kJ/m2K]	Metal clad
MCS 150MM QUADCORE	0.13	NO	7	YES
CAVITY	0.15	NO	129	NO
PARTY FF	0.6	NO	191	NO
INT WALL	0.5	NO	9	NO
MCS QUADCORE 150MM	0.12	NO	7	YES
GF	0.2	YES	36	NO
CD	1.5	NO	4.93	NO
INT FLOOR/CEILING	0.6	NO	12	NO

Window/Rooflight constructions

Name	U-value [W/m2K]	Solar transmittance	Light transmittance
WINDOW AND DOOR	1.4	0.85	0.9
ROOF WINDOW	1	0.39	0.9

Notes

Hot water systems

Name	INSTANT HWS
Generator Type	Instantaneous hot water only
Fuel type	Grid Supplied Electricity
Seasonal efficiency	1
Uses CHP	NO
Storage system	NO
Storage volume [litres]	-
Insulation thickness [mm]	-
Secondary circulation	-
Circulation losses [W/m]	-
Pump power [kW]	-
Loop length [m]	-
Showers served	Default (x1)

Shower types

Name	Default
Type	Standard flow
Above bath	NO
WWHRS fitted	NO
HR seasonal efficiency	-
Pump nominal power [W]	-

Notes

Photovoltaic systems

(Multiplier) Name	(1) PV
Area [m2]	-
Module type	-
Peak power [kWp]	0.75
Orientation	North
Inclination [deg]	0
Overshading	None or very little (<20%)
Ventilation	Moderately ventilated modules

Notes

Heating, ventilation, and air conditioning systems	
Name	HEATING
Type	Split or multi-split system
Heat source	Heat pump (electric): air source
Heating fuel type	Grid Supplied Electricity
Heat generator seasonal efficiency	4
Uses CHP	NO
Variable speed pumping type	-
Heat generator radiant efficiency	-
Integral fan power [W/kW]	-
Cooling generator type	Heat pump (electric)
Cooling fuel type	Grid Supplied Electricity
Cooling generator seasonal EER	4.5
Cooling generator nominal EER	4.5
Mixed-mode cooling operation	NO
Heat recovery system	-
Heat recovery seasonal efficiency	-
Variable heat recovery efficiency	-
Specific fan power [W/(l/s)]	-
Air leakage via ductwork & AHU [%]	-
Submetering and M&T for this system	NO

Notes

Zone name: Z0/01 WORKSHOP | **Activity:** Workshop - small scale | **Multiplier:** 1

Area [m2]: 52.24 | **Height [m]:** 3 | **Air permeability @ 50pa [m3/hm2]:** 5

HVAC system, ventilation, and exhaust

Name	HEATING
Destratification fans	NO
Ventilation type	Natural
SFP for local mechanical supply & extract [W/(l/s)]	-
Heat Recovery system	-
Heat recovery seasonal efficiency	-
Variable heat recovery efficiency	-
Local mechanical exhaust	NO
Exhaust air flow rate [l/s.m2]	-
SFP for mechanical exhaust [W/(l/s)]	-
Exhaust fans location	-
SFP for system terminal units [W/(l/s)]	-
Demand-controlled ventilation	None
Flow regulation type for ventilation control	-
Night cooling maximum hours [hours/month]	-
Night cooling maximum air flow rate [l/s.m2]	-
SFP for night cooling [W/(l/s)]	-

General Lighting and controls

Design illuminance [Lux]	300
Total power [W]	-
Lamp & ballast efficacy [lm/W]	140
Light output ratio	1
Lamp type	-
Air-extracting luminaires	NO
Controls	MANUAL
Type of photoelectric control	-
Constant illumincance control	NO
Controls parasitic power [W/m2]	-
Automatic zoning for daylight	YES
Occupancy sensing	NONE
Occupancy sensing parasitic power [W/m2]	-

Display lighting

Efficient lamps	NO
Lamp & ballast efficacy [lm/W]	-
Time switching	NO

Thermal bridges Psi values [W/mK]

Junction type	Metal clad	Not metal clad
Roof-wall	0.1	0.18
Wall-ground floor	1.725	0.24
Wall-wall (corner)	0.004	0.041
Wall-not ground floor	0	0.11
Lintel (window/door)	0.49	0.423
Sill (window)	0.06	0.023
Jamb (window/door)	0.03	0.019

Hot water system

Name	INSTANT HWS
Dead leg length in this zone [m]	0

Shell & core

Shell area for fit-out	-

Envelopes

(Multiplier) Name	(1) Z0/01 WORKSHOP/s	(1) Z0/01 WORKSHOP/ei	(1) Z0/01 WORKSHOP/n	(1) Z0/01 WORKSHOP/w	(1) Z0/01 WORKSHOP/f	(1) Z0/01 WORKSHOP/s.1	(1) Z0/01 WORKSHOP/n.1	(1) Z0/01 WORKSHOP/w.1	(1) Z0/01 WORKSHOP/ci
Type	Wall	Wall	Wall	Wall	Floor or Ceiling	Wall	Wall	Wall	Floor or Ceiling
Area [m2]	12.53	26.25	12.53	18.38	52.24	5.37	5.37	7.88	52.24
Orientation	South	East	North	West	Horizontal	South	North	West	Horizontal
Adjacent space	Exterior	Conditioned	Exterior	Exterior	Underground	Exterior	Exterior	Exterior	Conditioned
Construction name	CAVITY	PARTY FF	CAVITY	CAVITY	GF	MCS 150MM QUADCORE	MCS 150MM QUADCORE	MCS 150MM QUADCORE	INT FLOOR/CEILING

Windows & rooflights

(Multiplier) Name	(1) Z0/01 WORKSHOP/s/g
In envelope	Z0/01 WORKSHOP/s
Area [m2]	3.78
Glazing name	WINDOW AND DOOR
Shading position	None (no shading)
Shading colour	-
Shading translucency	-
Transmission factor	1
Frame / Aspect ratios	0.42 / 1.17

Doors

(Multiplier) Name	(1) CD
In envelope	Z0/01 WORKSHOP/s
Area [m2]	7.5
Type	Vehicle access
Construction name	CD

Notes

Zone name: Z1/01 WC | **Activity:** Toilet | **Multiplier:** 1

Area [m2]: 4.73 | **Height [m]:** 2.53 | **Air permeability @ 50pa [m3/hm2]:** 5

HVAC system, ventilation, and exhaust

Name	HEATING
Destratification fans	NO
Ventilation type	Natural
SFP for local mechanical supply & extract [W/(l/s)]	-
Heat Recovery system	-
Heat recovery seasonal efficiency	-
Variable heat recovery efficiency	-
Local mechanical exhaust	YES
Exhaust air flow rate [l/s.m2]	7
SFP for mechanical exhaust [W/(l/s)]	0.3
Exhaust fans location	Fan within zone
SFP for system terminal units [W/(l/s)]	-
Demand-controlled ventilation	None
Flow regulation type for ventilation control	-
Night cooling maximum hours [hours/month]	-
Night cooling maximum air flow rate [l/s.m2]	-
SFP for night cooling [W/(l/s)]	-

General Lighting and controls

Design illuminance [Lux]	200
Total power [W]	-
Lamp & ballast efficacy [lm/W]	140
Light output ratio	1
Lamp type	-
Air-extracting luminaires	NO
Controls	MANUAL
Type of photoelectric control	-
Constant illumincance control	NO
Controls parasitic power [W/m2]	-
Automatic zoning for daylight	YES
Occupancy sensing	NONE
Occupancy sensing parasitic power [W/m2]	-

Display lighting

Efficient lamps	NO
Lamp & ballast efficacy [lm/W]	-
Time switching	NO

Thermal bridges Psi values [W/mK]

Junction type	Metal clad	Not metal clad
Roof-wall	0.1	0.18
Wall-ground floor	1.725	0.24
Wall-wall (corner)	0.004	0.041
Wall-not ground floor	0	0.11
Lintel (window/door)	0.49	0.423
Sill (window)	0.06	0.023
Jamb (window/door)	0.03	0.019

Hot water system

Name	INSTANT HWS
Dead leg length in this zone [m]	0

Shell & core

Shell area for fit-out	-

Envelopes

(Multiplier) Name	(1) Z1/01 WC/si	(1) Z1/01 WC/ei	(1) Z1/01 WC/n	(1) Z1/01 WC/wi	(1) Z1/01 WC/c	(1) Z1/01 WC/ci
Type	Wall	Wall	Wall	Wall	Flat roof	Floor or Ceiling
Area [m2]	6.15	5.54	5.7	5.54	4.77	4.73
Orientation	South	East	North	West	Horizontal	Horizontal
Adjacent space	Conditioned	Conditioned	Exterior	Conditioned	Exterior	Conditioned
Construction name	INT WALL	PARTY FF	MCS 150MM QUADCORE	INT WALL	MCS QUADCORE 150MM	INT FLOOR/CEILING

Notes

Zone name: Z1/02 OFFICE | **Activity:** Generic Office Area | **Multiplier:** 1

Area [m2]: 47.61 | **Height [m]:** 2.53 | **Air permeability @ 50pa [m3/hm2]:** 5

HVAC system, ventilation, and exhaust

Name	HEATING
Destratification fans	NO
Ventilation type	Natural
SFP for local mechanical supply & extract [W/(l/s)]	-
Heat Recovery system	-
Heat recovery seasonal efficiency	-
Variable heat recovery efficiency	-
Local mechanical exhaust	NO
Exhaust air flow rate [l/s.m2]	-
SFP for mechanical exhaust [W/(l/s)]	-
Exhaust fans location	-
SFP for system terminal units [W/(l/s)]	-
Demand-controlled ventilation	None
Flow regulation type for ventilation control	-
Night cooling maximum hours [hours/month]	-
Night cooling maximum air flow rate [l/s.m2]	-
SFP for night cooling [W/(l/s)]	-

General Lighting and controls

Design illuminance [Lux]	300
Total power [W]	-
Lamp & ballast efficacy [lm/W]	140
Light output ratio	1
Lamp type	-
Air-extracting luminaires	NO
Controls	MANUAL
Type of photoelectric control	-
Constant illumincance control	NO
Controls parasitic power [W/m2]	-
Automatic zoning for daylight	YES
Occupancy sensing	NONE
Occupancy sensing parasitic power [W/m2]	-

Display lighting

Efficient lamps	NO
Lamp & ballast efficacy [lm/W]	-
Time switching	NO

Thermal bridges Psi values [W/mK]

Junction type	Metal clad	Not metal clad
Roof-wall	0.1	0.18
Wall-ground floor	1.725	0.24
Wall-wall (corner)	0.004	0.041
Wall-not ground floor	0	0.11
Lintel (window/door)	0.49	0.423
Sill (window)	0.06	0.023
Jamb (window/door)	0.03	0.019

Hot water system

Name	INSTANT HWS
Dead leg length in this zone [m]	0

Shell & core

Shell area for fit-out	-

Envelopes

(Multiplier) Name	(1) Z1/02 OFFICE/s	(1) Z1/02 OFFICE/ei	(1) Z1/02 OFFICE/n	(1) Z1/02 OFFICE/w	(1) Z1/02 OFFICE/c	(1) Z1/02 OFFICE/fi	(1) Z1/02 OFFICE/ei.1	(1) Z1/02 OFFICE/ni
Type	Wall	Wall	Wall	Wall	Flat roof	Floor or Ceiling	Wall	Wall
Area [m2]	20.53	20.97	9.41	26.51	48.61	47.61	5.54	6.15
Orientation	South	East	North	West	Horizontal	Horizontal	East	North
Adjacent space	Exterior	Conditioned	Exterior	Exterior	Exterior	Conditioned	Conditioned	Conditioned
Construction name	MCS 150MM QUADCORE	PARTY FF	MCS 150MM QUADCORE	MCS 150MM QUADCORE	MCS QUADCORE 150MM	INT FLOOR/CEILING	INT WALL	INT WALL

Windows & rooflights

(Multiplier) Name	(1) Z1/02 OFFICE/s/g	(1) Z1/02 OFFICE/s/g.1	(1) Z1/02 OFFICE/c/g
In envelope	Z1/02 OFFICE/s	Z1/02 OFFICE/s	Z1/02 OFFICE/c
Area [m2]	0.95	1.89	4.8 (Roof window)
Glazing name	WINDOW AND DOOR	WINDOW AND DOOR	ROOF WINDOW
Shading position	None (no shading)	None (no shading)	None (no shading)
Shading colour	-	-	-
Shading translucency	-	-	-
Transmission factor	1	1	1
Frame / Aspect ratios	0.31 / 1.17	0.27 / 0.58	0.1 / 0.7

Notes

BRUKL Output Document

HM Government

Compliance with England Building Regulations Part L 2021

Project name

6320-SUST-DBS-EMERY ROAD 1

As designed

Date: Tue Aug 12 08:31:21 2025

Administrative information

Building Details

Address: UNIT 1, 6-6 EMERY ROAD, BRISLINGTON, BRISTOL, BS4 5PF

Certification tool

Calculation engine: SBEM

Calculation engine version: v6.1.e.1

Interface to calculation engine: iSBEM

Interface to calculation engine version: v6.1.e

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

Certifier details

Name: [redacted]

Telephone number: [redacted]

Address: [redacted]

Foundation area [m²]: 52.5

The CO_2 emission and primary energy rates of the building must not exceed the targets

Target CO_2 emission rate (TER), $kgCO_2/m^2$annum	4.21	
Building CO_2 emission rate (BER), $kgCO_2/m^2$annum	3.5	
Target primary energy rate (TPER), kWh_{PE}/m^2annum	44.56	
Building primary energy rate (BPER), kWh_{PE}/m^2annum	37.87	
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	$U_{a\text{-}Limit}$	$U_{a\text{-}Calc}$	$U_{i\text{-}Calc}$	First surface with maximum value
Walls*	0.26	0.14	0.15	Z0/01 WORKSHOP/s
Floors	0.18	0.2	0.2	Z0/01 WORKSHOP/f
Pitched roofs	0.16	-	-	No heat loss pitched roofs
Flat roofs	0.18	0.12	0.12	Z1/01 WC/c
Windows** and roof windows	1.6	1.23	1.4	Z0/01 WORKSHOP/s/g
Rooflights***	2.2	-	-	No external rooflights
Personnel doors^	1.6	-	-	No external personnel doors
Vehicle access & similar large doors	1.3	1.5	1.5	CD
High usage entrance doors	3	-	-	No external high usage entrance doors

$U_{a\text{-}Limit}$ = Limiting area-weighted average U-values [W/(m²K)] $U_{i\text{-}Calc}$ = Calculated maximum individual element U-values [W/(m²K)]

$U_{a\text{-}Calc}$ = 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	5

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- HEATING

	Heating efficiency	Cooling efficiency	Radiant efficiency	SFP [W/(l/s)]	HR efficiency
This system	4	4.5	-	-	-
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- INSTANT HWS

	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		
Standard value	0.3	1.1	0.5	2.3	2	0.5	0.5	0.4	1	Zone	Standard
Z1/01 WC	0.3	-	-	-	-	-	-	-	-	-	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
Z0/01 WORKSHOP	140	-	-
Z1/01 WC	140	-	-
Z1/02 OFFICE	140	-	-

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?
Z0/01 WORKSHOP	NO (-74.8%)	NO
Z1/01 WC	N/A	N/A

Zone	Solar gain limit exceeded? (%)	Internal blinds used?
Z1/02 OFFICE	NO (-42.6%)	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?	NO
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^2]	104.6	104.6
External area [m^2]	229.8	229.8
Weather	CAR	CAR
Infiltration [m^3/hm^2@ 50Pa]	5	4
Average conductance [W/K]	59.86	84.95
Average U-value [W/m^2K]	0.26	0.37
Alpha value* [%]	35.38	52.73

* 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/m^2]

	Actual	Notional
Heating	6.28	14.43
Cooling	5.68	2.92
Auxiliary	0.34	0.45
Lighting	10.51	9.79
Hot water	2.14	2.14
Equipment*	28.77	28.77
TOTAL**	**24.94**	**29.72**

* 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^2]

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

Energy & CO_2 Emissions Summary

	Actual	Notional
Heating + cooling demand [MJ/m^2]	149.58	183.3
Primary energy [kWh_{PE}/m^2]	37.87	44.56
Total emissions [kg/m^2]	3.5	4.21

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] Split or multi-split system, [HS] ASHP, [HFT] Electricity, [CFT] Electricity										
	Actual	84.3	65.3	6.3	5.7	0.3	3.73	3.2	4	4.5
	Notional	137.1	46.2	14.4	2.9	0.4	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

6320-SUST-DBS-EMERY ROAD 2 PV

As designed

Date: Tue Aug 12 08:25:32 2025

Administrative information

Building Details

Address: UNIT 2, 6-6 EMERY ROAD, BRISLINGTON, BRISTOL, BS4 5PF

Certifier details

Name: [redacted]

Telephone number: [redacted]

Address: [redacted]

Certification tool

Calculation engine: SBEM

Calculation engine version: v6.1.e.1

Interface to calculation engine: iSBEM

Interface to calculation engine version: v6.1.e

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

Foundation area [m^2]: 52.5

The CO_2 emission and primary energy rates of the building must not exceed the targets

Target CO_2 emission rate (TER), $kgCO_2/m^2annum$	3.54	
Building CO_2 emission rate (BER), $kgCO_2/m^2annum$	2.44	
Target primary energy rate (TPER), kWh_{PE}/m^2annum	37.67	
Building primary energy rate (BPER), kWh_{PE}/m^2annum	26.02	
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	$U_{a\text{-}Limit}$	$U_{a\text{-}Calc}$	$U_{i\text{-}Calc}$	First surface with maximum value
Walls*	0.26	0.13	0.15	Z0/01 WORKSHOP/s
Floors	0.18	0.2	0.2	Z0/01 WORKSHOP/f
Pitched roofs	0.16	-	-	No heat loss pitched roofs
Flat roofs	0.18	0.12	0.12	Z1/01 WC/c
Windows** and roof windows	1.6	1.23	1.4	Z0/01 WORKSHOP/s/g
Rooflights***	2.2	-	-	No external rooflights
Personnel doors^	1.6	-	-	No external personnel doors
Vehicle access & similar large doors	1.3	1.3	1.3	CD
High usage entrance doors	3	-	-	No external high usage entrance doors

$U_{a\text{-}Limit}$ = Limiting area-weighted average U-values [$W/(m^2K)$]

$U_{a\text{-}Calc}$ = Calculated area-weighted average U-values [$W/(m^2K)$]

$U_{i\text{-}Calc}$ = Calculated maximum individual element U-values [$W/(m^2K)$]

* 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^2K

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	5

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- HEATING

	Heating efficiency	Cooling efficiency	Radiant efficiency	SFP [W/(l/s)]	HR efficiency
This system	4	4.5	-	-	-
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- INSTANT HWS

	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		
Standard value	0.3	1.1	0.5	2.3	2	0.5	0.5	0.4	1	Zone	Standard
Z1/01 WC	0.3	-	-	-	-	-	-	-	-	-	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
Z0/01 WORKSHOP	140	-	-
Z1/01 WC	140	-	-
Z1/02 OFFICE	140	-	-

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?
Z0/01 WORKSHOP	NO (-75.4%)	NO
Z1/01 WC	N/A	N/A

Zone	Solar gain limit exceeded? (%)	Internal blinds used?
Z1/02 OFFICE	YES (+8.9%)	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?	NO
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^2]	104.6	104.6
External area [m^2]	177.1	177.1
Weather	CAR	CAR
Infiltration [m^3/hm^2@ 50Pa]	5	4
Average conductance [W/K]	51.13	60.42
Average U-value [W/m^2K]	0.29	0.34
Alpha value* [%]	26.98	51.79

* 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/m^2]

	Actual	Notional
Heating	4.49	9.63
Cooling	5.31	2.42
Auxiliary	0.34	0.45
Lighting	10.51	10.57
Hot water	2.14	2.14
Equipment*	28.77	28.77
TOTAL**	**22.79**	**25.2**

* 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^2]

	Actual	Notional
Photovoltaic systems	5.81	0
Wind turbines	0	0
CHP generators	0	0
Solar thermal systems	0	0
Displaced electricity	*5.81*	*0*

Energy & CO_2 Emissions Summary

	Actual	Notional
Heating + cooling demand [MJ/m^2]	121.33	129.82
Primary energy [kWh_{PE}/m^2]	26.02	37.67
Total emissions [kg/m^2]	2.44	3.54

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] Split or multi-split system, [HS] ASHP, [HFT] Electricity, [CFT] Electricity										
	Actual	60.2	61.1	4.5	5.3	0.3	3.73	3.2	4	4.5
	Notional	91.5	38.3	9.6	2.4	0.4	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

SBEM Data Reflection Report — Actual Building

Date: Tue Aug 12 08:25:31 2025

Project name: 6320-SUST-DBS-EMERY ROAD 2-PV **Building type:** Offices and Workshop businesses **Building area [m2]:** 105

General

Building address	UNIT 2 6-6 EMERY ROAD BRISLINGTON BRISTOL BS4 5PF
Building / Foundation areas [m2]	104.58 / 52.5
Weather	CAR
Building rotation [degrees]	0
Maximum no. of storeys	2

Accredited person/Energy assessor

Name	[redacted]
Telephone number	[redacted]
Address	[redacted]
Email	[redacted]

Analysis

Compliance with	England Building Regulations Part L 2021
Asset rating	None
Stage	As designed
Shell & core building	NO
Modular & portable building	NO
Planned time of use	-
Distress purchase	-
Manufacture date of subassemblies	-

Software

SBEM version	v6.1.e.1
Interface to SBEM	iSBEM
Interface version	v6.1.e

Project building services

Electric power factor	<0.9
Submetering and M&T for lighting systems	NO
Emission factor for district heating [kgCO2/kWh]	0.36
Primary energy factor for district heating [kWhPE/kWh]	1.58
New district heating network	NO

Summary of objects

Object type	Total number	Total related area [m2]
Envelope/Door constructions	8	-
Window/Rooflight constructions	2	-
HW systems	1	-
Shower types	1	-
SE systems	0	0
PV systems	1	1e-005
Wind generators	0	-
CHP generators	0	-
Solar collectors	0	0
HVAC systems	1	-
Zones	3	104.58
Envelopes	22	410.94
Doors	1	7.5
Windows/Rooflights	4	11.42

Envelope/Door constructions

Name	U-value [W/m2K]	Adjusted U-value	Km [kJ/m2K]	Metal clad
MCS 150MM QUADCORE	0.13	NO	7	YES
CAVITY	0.15	NO	129	NO
PARTY FF	0.6	NO	191	NO
INT WALL	0.5	NO	9	NO
MCS QUADCORE 150MM	0.12	NO	7	YES
GF	0.2	YES	36	NO
CD	1.3	NO	4.93	NO
INT FLOOR/CEILING	0.6	NO	12	NO

Window/Rooflight constructions

Name	U-value [W/m2K]	Solar transmittance	Light transmittance
WINDOW AND DOOR	1.4	0.83	0.9
ROOF WINDOW	1	0.39	0.9

Notes

Hot water systems

Name	INSTANT HWS
Generator Type	Instantaneous hot water only
Fuel type	Grid Supplied Electricity
Seasonal efficiency	1
Uses CHP	NO
Storage system	NO
Storage volume [litres]	-
Insulation thickness [mm]	-
Secondary circulation	-
Circulation losses [W/m]	-
Pump power [kW]	-
Loop length [m]	-
Showers served	Default (x1)

Shower types

Name	Default
Type	Standard flow
Above bath	NO
WWHRS fitted	NO
HR seasonal efficiency	-
Pump nominal power [W]	-

Notes

Photovoltaic systems

(Multiplier) Name	(1) PV
Area [m2]	-
Module type	-
Peak power [kWp]	0.75
Orientation	North
Inclination [deg]	0
Overshading	None or very little (<20%)
Ventilation	Moderately ventilated modules

Notes

Heating, ventilation, and air conditioning systems	
Name	HEATING
Type	Split or multi-split system
Heat source	Heat pump (electric): air source
Heating fuel type	Grid Supplied Electricity
Heat generator seasonal efficiency	4
Uses CHP	NO
Variable speed pumping type	-
Heat generator radiant efficiency	-
Integral fan power [W/kW]	-
Cooling generator type	Heat pump (electric)
Cooling fuel type	Grid Supplied Electricity
Cooling generator seasonal EER	4.5
Cooling generator nominal EER	4.5
Mixed-mode cooling operation	NO
Heat recovery system	-
Heat recovery seasonal efficiency	-
Variable heat recovery efficiency	-
Specific fan power [W/(l/s)]	-
Air leakage via ductwork & AHU [%]	-
Submetering and M&T for this system	NO

Notes

Zone name: Z0/01 WORKSHOP | **Activity:** Workshop - small scale | **Multiplier:** 1

Area [m2]: 52.24 | **Height [m]:** 3 | **Air permeability @ 50pa [m3/hm2]:** 5

HVAC system, ventilation, and exhaust

Name	HEATING
Destratification fans	NO
Ventilation type	Natural
SFP for local mechanical supply & extract [W/(l/s)]	-
Heat Recovery system	-
Heat recovery seasonal efficiency	-
Variable heat recovery efficiency	-
Local mechanical exhaust	NO
Exhaust air flow rate [l/s.m2]	-
SFP for mechanical exhaust [W/(l/s)]	-
Exhaust fans location	-
SFP for system terminal units [W/(l/s)]	-
Demand-controlled ventilation	None
Flow regulation type for ventilation control	-
Night cooling maximum hours [hours/month]	-
Night cooling maximum air flow rate [l/s.m2]	-
SFP for night cooling [W/(l/s)]	-

General Lighting and controls

Design illuminance [Lux]	300
Total power [W]	-
Lamp & ballast efficacy [lm/W]	140
Light output ratio	1
Lamp type	-
Air-extracting luminaires	NO
Controls	MANUAL
Type of photoelectric control	-
Constant illumincance control	NO
Controls parasitic power [W/m2]	-
Automatic zoning for daylight	YES
Occupancy sensing	NONE
Occupancy sensing parasitic power [W/m2]	-

Display lighting

Efficient lamps	NO
Lamp & ballast efficacy [lm/W]	-
Time switching	NO

Thermal bridges Psi values [W/mK]

Junction type	Metal clad	Not metal clad
Roof-wall	0.1	0.18
Wall-ground floor	1.725	0.24
Wall-wall (corner)	0.004	0.041
Wall-not ground floor	0	0.11
Lintel (window/door)	0.49	0.423
Sill (window)	0.06	0.023
Jamb (window/door)	0.03	0.019

Hot water system

Name	INSTANT HWS
Dead leg length in this zone [m]	0

Shell & core

Shell area for fit-out	-

Envelopes

(Multiplier) Name	(1) Z0/01 WORKSHOP/s	(1) Z0/01 WORKSHOP/ei	(1) Z0/01 WORKSHOP/n	(1) Z0/01 WORKSHOP/w	(1) Z0/01 WORKSHOP/f	(1) Z0/01 WORKSHOP/s.1	(1) Z0/01 WORKSHOP/n.1	(1) Z0/01 WORKSHOP/ci
Type	Wall	Wall	Wall	Wall	Floor or Ceiling	Wall	Wall	Floor or Ceiling
Area [m2]	12.53	26.25	12.53	26.65	52.24	5.37	5.37	52.24
Orientation	South	East	North	West	Horizontal	South	North	Horizontal
Adjacent space	Exterior	Conditioned	Exterior	Conditioned	Underground	Exterior	Exterior	Conditioned
Construction name	CAVITY	PARTY FF	CAVITY	PARTY FF	GF	MCS 150MM QUADCORE	MCS 150MM QUADCORE	NT FLOOR/CEILING

Windows & rooflights

(Multiplier) Name	(1) Z0/01 WORKSHOP/s/g
In envelope	Z0/01 WORKSHOP/s
Area [m2]	3.78
Glazing name	WINDOW AND DOOR
Shading position	None (no shading)
Shading colour	-
Shading translucency	-
Transmission factor	1
Frame / Aspect ratios	0.42 / 1.17

Doors

(Multiplier) Name	(1) CD
In envelope	Z0/01 WORKSHOP/s
Area [m2]	7.5
Type	Vehicle access
Construction name	CD

Notes

Zone name: Z1/01 WC | **Activity:** Toilet | **Multiplier:** 1

Area [m2]: 4.73 | **Height [m]:** 2.53 | **Air permeability @ 50pa [m3/hm2]:** 5

HVAC system, ventilation, and exhaust

Name	HEATING
Destratification fans	NO
Ventilation type	Natural
SFP for local mechanical supply & extract [W/(l/s)]	-
Heat Recovery system	-
Heat recovery seasonal efficiency	-
Variable heat recovery efficiency	-
Local mechanical exhaust	YES
Exhaust air flow rate [l/s.m2]	7
SFP for mechanical exhaust [W/(l/s)]	0.3
Exhaust fans location	Fan within zone
SFP for system terminal units [W/(l/s)]	-
Demand-controlled ventilation	None
Flow regulation type for ventilation control	-
Night cooling maximum hours [hours/month]	-
Night cooling maximum air flow rate [l/s.m2]	-
SFP for night cooling [W/(l/s)]	-

General Lighting and controls

Design illuminance [Lux]	200
Total power [W]	-
Lamp & ballast efficacy [lm/W]	140
Light output ratio	1
Lamp type	-
Air-extracting luminaires	NO
Controls	MANUAL
Type of photoelectric control	-
Constant illumincance control	NO
Controls parasitic power [W/m2]	-
Automatic zoning for daylight	YES
Occupancy sensing	NONE
Occupancy sensing parasitic power [W/m2]	-

Display lighting

Efficient lamps	NO
Lamp & ballast efficacy [lm/W]	-
Time switching	NO

Thermal bridges Psi values [W/mK]

Junction type	Metal clad	Not metal clad
Roof-wall	0.1	0.18
Wall-ground floor	1.725	0.24
Wall-wall (corner)	0.004	0.041
Wall-not ground floor	0	0.11
Lintel (window/door)	0.49	0.423
Sill (window)	0.06	0.023
Jamb (window/door)	0.03	0.019

Hot water system

Name	INSTANT HWS
Dead leg length in this zone [m]	0

Shell & core

Shell area for fit-out	-

Envelopes

(Multiplier) Name	(1) Z1/01 WC/si	(1) Z1/01 WC/ei	(1) Z1/01 WC/n	(1) Z1/01 WC/wi	(1) Z1/01 WC/c	(1) Z1/01 WC/ci
Type	Wall	Wall	Wall	Wall	Flat roof	Floor or Ceiling
Area [m2]	6.15	5.54	5.7	5.54	4.77	4.73
Orientation	South	East	North	West	Horizontal	Horizontal
Adjacent space	Conditioned	Conditioned	Exterior	Conditioned	Exterior	Conditioned
Construction name	INT WALL	INT WALL	MCS 150MM QUADCORE	PARTY FF	MCS QUADCORE 150MM	INT FLOOR/CEILING

Notes

Zone name: Z1/02 OFFICE | **Activity:** Generic Office Area | **Multiplier:** 1

Area [m2]: 47.61 | **Height [m]:** 2.53 | **Air permeability @ 50pa [m3/hm2]:** 5

HVAC system, ventilation, and exhaust

Name	HEATING
Destratification fans	NO
Ventilation type	Natural
SFP for local mechanical supply & extract [W/(l/s)]	-
Heat Recovery system	-
Heat recovery seasonal efficiency	-
Variable heat recovery efficiency	-
Local mechanical exhaust	NO
Exhaust air flow rate [l/s.m2]	-
SFP for mechanical exhaust [W/(l/s)]	-
Exhaust fans location	-
SFP for system terminal units [W/(l/s)]	-
Demand-controlled ventilation	None
Flow regulation type for ventilation control	-
Night cooling maximum hours [hours/month]	-
Night cooling maximum air flow rate [l/s.m2]	-
SFP for night cooling [W/(l/s)]	-

General Lighting and controls

Design illuminance [Lux]	300
Total power [W]	-
Lamp & ballast efficacy [lm/W]	140
Light output ratio	1
Lamp type	-
Air-extracting luminaires	NO
Controls	MANUAL
Type of photoelectric control	-
Constant illumincance control	NO
Controls parasitic power [W/m2]	-
Automatic zoning for daylight	YES
Occupancy sensing	NONE
Occupancy sensing parasitic power [W/m2]	-

Display lighting

Efficient lamps	NO
Lamp & ballast efficacy [lm/W]	-
Time switching	NO

Thermal bridges Psi values [W/mK]

Junction type	Metal clad	Not metal clad
Roof-wall	0.1	0.18
Wall-ground floor	1.725	0.24
Wall-wall (corner)	0.004	0.041
Wall-not ground floor	0	0.11
Lintel (window/door)	0.49	0.423
Sill (window)	0.06	0.023
Jamb (window/door)	0.03	0.019

Hot water system

Name	INSTANT HWS
Dead leg length in this zone [m]	0

Shell & core

Shell area for fit-out	-

Envelopes

(Multiplier) Name	(1) Z1/02 OFFICE/s	(1) Z1/02 OFFICE/ei	(1) Z1/02 OFFICE/n	(1) Z1/02 OFFICE/w	(1) Z1/02 OFFICE/c	(1) Z1/02 OFFICE/fi	(1) Z1/02 OFFICE/ei.1	(1) Z1/02 OFFICE/ni
Type	Wall	Wall	Wall	Wall	Flat roof	Floor or Ceiling	Wall	Wall
Area [m2]	20.53	20.97	9.41	26.51	48.61	47.61	5.54	6.15
Orientation	South	West	North	East	Horizontal	Horizontal	West	North
Adjacent space	Exterior	Conditioned	Exterior	Conditioned	Exterior	Conditioned	Conditioned	Conditioned
Construction name	MCS 150MM QUADCORE	PARTY FF	MCS 150MM QUADCORE	PARTY FF	MCS QUADCORE 150MM	INT FLOOR/CEILING	INT WALL	INT WALL

Windows & rooflights

(Multiplier) Name	(1) Z1/02 OFFICE/s/g	(1) Z1/02 OFFICE/s/g.1	(1) Z1/02 OFFICE/c/g
In envelope	Z1/02 OFFICE/s	Z1/02 OFFICE/s	Z1/02 OFFICE/c
Area [m2]	0.95	1.89	4.8 (Roof window)
Glazing name	WINDOW AND DOOR	WINDOW AND DOOR	ROOF WINDOW
Shading position	None (no shading)	None (no shading)	None (no shading)
Shading colour	-	-	-
Shading translucency	-	-	-
Transmission factor	1	1	1
Frame / Aspect ratios	0.31 / 1.17	0.27 / 0.58	0.1 / 0.7

Notes

BRUKL Output Document

HM Government

Compliance with England Building Regulations Part L 2021

Project name

6320-SUST-DBS-EMERY ROAD 2

As designed

Date: Tue Aug 12 08:28:43 2025

Administrative information

Building Details

Address: UNIT 2, 6-6 EMERY ROAD, BRISLINGTON, BRISTOL, BS4 5PF

Certification tool

Calculation engine: SBEM

Calculation engine version: v6.1.e.1

Interface to calculation engine: iSBEM

Interface to calculation engine version: v6.1.e

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

Certifier details

Name: [redacted]

Telephone number: [redacted]

Address: [redacted]

Foundation area [m²]: 52.5

The CO_2 emission and primary energy rates of the building must not exceed the targets

Target CO_2 emission rate (TER), $kgCO_2/m^2$annum	3.54	
Building CO_2 emission rate (BER), $kgCO_2/m^2$annum	3.19	
Target primary energy rate (TPER), kWh_{PE}/m^2annum	37.67	
Building primary energy rate (BPER), kWh_{PE}/m^2annum	34.7	
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	$U_{a\text{-}Limit}$	$U_{a\text{-}Calc}$	$U_{i\text{-}Calc}$	First surface with maximum value
Walls*	0.26	0.13	0.15	Z0/01 WORKSHOP/s
Floors	0.18	0.2	0.2	Z0/01 WORKSHOP/f
Pitched roofs	0.16	-	-	No heat loss pitched roofs
Flat roofs	0.18	0.12	0.12	Z1/01 WC/c
Windows** and roof windows	1.6	1.23	1.4	Z0/01 WORKSHOP/s/g
Rooflights***	2.2	-	-	No external rooflights
Personnel doors^	1.6	-	-	No external personnel doors
Vehicle access & similar large doors	1.3	1.5	1.5	CD
High usage entrance doors	3	-	-	No external high usage entrance doors

$U_{a\text{-}Limit}$ = Limiting area-weighted average U-values [W/(m²K)] $U_{i\text{-}Calc}$ = Calculated maximum individual element U-values [W/(m²K)]

$U_{a\text{-}Calc}$ = 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	5

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- HEATING

	Heating efficiency	Cooling efficiency	Radiant efficiency	SFP [W/(l/s)]	HR efficiency
This system	4	4.5	-	-	-
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- INSTANT HWS

	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		
Standard value	0.3	1.1	0.5	2.3	2	0.5	0.5	0.4	1	Zone	Standard
Z1/01 WC	0.3	-	-	-	-	-	-	-	-	-	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
Z0/01 WORKSHOP	140	-	-
Z1/01 WC	140	-	-
Z1/02 OFFICE	140	-	-

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?
Z0/01 WORKSHOP	NO (-74.8%)	NO
Z1/01 WC	N/A	N/A

Zone	Solar gain limit exceeded? (%)	Internal blinds used?
Z1/02 OFFICE	YES (+9.9%)	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?	NO
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^2]	104.6	104.6
External area [m^2]	177.1	177.1
Weather	CAR	CAR
Infiltration [m^3/hm^2@ 50Pa]	5	4
Average conductance [W/K]	52.63	60.42
Average U-value [W/m^2K]	0.3	0.34
Alpha value* [%]	26.21	51.79

* 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/m^2]

	Actual	Notional
Heating	4.56	9.63
Cooling	5.37	2.42
Auxiliary	0.34	0.45
Lighting	10.51	10.57
Hot water	2.14	2.14
Equipment*	28.77	28.77
TOTAL**	**22.91**	**25.2**

* 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^2]

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

Energy & CO_2 Emissions Summary

	Actual	Notional
Heating + cooling demand [MJ/m^2]	122.89	129.82
Primary energy [kWh_{PE}/m^2]	34.7	37.67
Total emissions [kg/m^2]	3.19	3.54

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] Split or multi-split system, [HS] ASHP, [HFT] Electricity, [CFT] Electricity										
	Actual	61.2	61.7	4.6	5.4	0.3	3.73	3.2	4	4.5
	Notional	91.5	38.3	9.6	2.4	0.4	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

6320-SUST-DBS-EMERY ROAD 3 PV

As designed

Date: Tue Aug 12 08:44:40 2025

Administrative information

Building Details

Address: UNIT 3, 6-6 EMERY ROAD, BRISLINGTON, BRISTOL, BS4 5PF

Certifier details

Name: [redacted]

Telephone number: [redacted]

Address: [redacted]

Certification tool

Calculation engine: SBEM

Calculation engine version: v6.1.e.1

Interface to calculation engine: iSBEM

Interface to calculation engine version: v6.1.e

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

Foundation area [m²]: 52.5

The CO_2 emission and primary energy rates of the building must not exceed the targets

Target CO_2 emission rate (TER), $kgCO_2/m^2$annum	3.54	
Building CO_2 emission rate (BER), $kgCO_2/m^2$annum	2.46	
Target primary energy rate (TPER), kWh_{PE}/m^2annum	37.67	
Building primary energy rate (BPER), kWh_{PE}/m^2annum	26.21	
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	$U_{a\text{-Limit}}$	$U_{a\text{-Calc}}$	$U_{i\text{-Calc}}$	First surface with maximum value
Walls*	0.26	0.13	0.15	Z0/01 WORKSHOP/s
Floors	0.18	0.2	0.2	Z0/01 WORKSHOP/f
Pitched roofs	0.16	-	-	No heat loss pitched roofs
Flat roofs	0.18	0.12	0.12	Z1/01 WC/c
Windows** and roof windows	1.6	1.23	1.4	Z0/01 WORKSHOP/s/g
Rooflights***	2.2	-	-	No external rooflights
Personnel doors^	1.6	-	-	No external personnel doors
Vehicle access & similar large doors	1.3	1.5	1.5	CD
High usage entrance doors	3	-	-	No external high usage entrance doors

$U_{a\text{-Limit}}$ = Limiting area-weighted average U-values [W/(m²K)] $U_{i\text{-Calc}}$ = Calculated maximum individual element U-values [W/(m²K)]

$U_{a\text{-Calc}}$ = 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	5

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- HEATING

	Heating efficiency	Cooling efficiency	Radiant efficiency	SFP [W/(l/s)]	HR efficiency
This system	4	4.5	-	-	-
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- INSTANT HWS

	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		
Standard value	0.3	1.1	0.5	2.3	2	0.5	0.5	0.4	1	Zone	Standard
Z1/01 WC	0.3	-	-	-	-	-	-	-	-	-	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
Z0/01 WORKSHOP	140	-	-
Z1/01 WC	140	-	-
Z1/02 OFFICE	140	-	-

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?
Z0/01 WORKSHOP	NO (-74.8%)	NO
Z1/01 WC	N/A	N/A

Zone	Solar gain limit exceeded? (%)	Internal blinds used?
Z1/02 OFFICE	YES (+9.9%)	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?	NO
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^2]	104.6	104.6
External area [m^2]	177.1	177.1
Weather	CAR	CAR
Infiltration [m^3/hm^2@ 50Pa]	5	4
Average conductance [W/K]	52.63	60.42
Average U-value [W/m^2K]	0.3	0.34
Alpha value* [%]	26.21	51.79

* 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/m^2]

	Actual	Notional
Heating	4.56	9.63
Cooling	5.37	2.42
Auxiliary	0.34	0.45
Lighting	10.51	10.57
Hot water	2.14	2.14
Equipment*	28.77	28.77
TOTAL**	**22.91**	**25.2**

* 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^2]

	Actual	Notional
Photovoltaic systems	5.81	0
Wind turbines	0	0
CHP generators	0	0
Solar thermal systems	0	0
Displaced electricity	*5.81*	*0*

Energy & CO_2 Emissions Summary

	Actual	Notional
Heating + cooling demand [MJ/m^2]	122.89	129.82
Primary energy [kWh_{PE}/m^2]	26.21	37.67
Total emissions [kg/m^2]	2.46	3.54

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] Split or multi-split system, [HS] ASHP, [HFT] Electricity, [CFT] Electricity										
	Actual	61.2	61.7	4.6	5.4	0.3	3.73	3.2	4	4.5
	Notional	91.5	38.3	9.6	2.4	0.4	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

SBEM Data Reflection Report — Actual Building

Date: Tue Aug 12 08:44:39 2025

Project name: 6320-SUST-DBS-EMERY ROAD 3 PV **Building type:** Offices and Workshop businesses **Building area [m2]:** 105

General

Building address	UNIT 3 6-6 EMERY ROAD BRISLINGTON BRISTOL BS4 5PF
Building / Foundation areas [m2]	104.58 / 52.5
Weather	CAR
Building rotation [degrees]	0
Maximum no. of storeys	2

Accredited person/Energy assessor

Name	[redacted]
Telephone number	[redacted]
Address	[redacted]
Email	[redacted]

Analysis

Compliance with	England Building Regulations Part L 2021
Asset rating	None
Stage	As designed
Shell & core building	NO
Modular & portable building	NO
Planned time of use	-
Distress purchase	-
Manufacture date of subassemblies	-

Software

SBEM version	v6.1.e.1
Interface to SBEM	iSBEM
Interface version	v6.1.e

Project building services

Electric power factor	<0.9
Submetering and M&T for lighting systems	NO
Emission factor for district heating [kgCO2/kWh]	0.36
Primary energy factor for district heating [kWhPE/kWh]	1.58
New district heating network	NO

Summary of objects

Object type	Total number	Total related area [m2]
Envelope/Door constructions	8	-
Window/Rooflight constructions	2	-
HW systems	1	-
Shower types	1	-
SE systems	0	0
PV systems	1	1e-005
Wind generators	0	-
CHP generators	0	-
Solar collectors	0	0
HVAC systems	1	-
Zones	3	104.58
Envelopes	22	410.94
Doors	1	7.5
Windows/Rooflights	4	11.42

Envelope/Door constructions

Name	U-value [W/m2K]	Adjusted U-value	Km [kJ/m2K]	Metal clad
MCS 150MM QUADCORE	0.13	NO	7	YES
CAVITY	0.15	NO	129	NO
PARTY FF	0.6	NO	191	NO
INT WALL	0.5	NO	9	NO
MCS QUADCORE 150MM	0.12	NO	7	YES
GF	0.2	YES	36	NO
CD	1.5	NO	4.93	NO
INT FLOOR/CEILING	0.6	NO	12	NO

Window/Rooflight constructions

Name	U-value [W/m2K]	Solar transmittance	Light transmittance
WINDOW AND DOOR	1.4	0.85	0.9
ROOF WINDOW	1	0.39	0.9

Notes

Hot water systems

Name	INSTANT HWS
Generator Type	Instantaneous hot water only
Fuel type	Grid Supplied Electricity
Seasonal efficiency	1
Uses CHP	NO
Storage system	NO
Storage volume [litres]	-
Insulation thickness [mm]	-
Secondary circulation	-
Circulation losses [W/m]	-
Pump power [kW]	-
Loop length [m]	-
Showers served	Default (x1)

Shower types

Name	Default
Type	Standard flow
Above bath	NO
WWHRS fitted	NO
HR seasonal efficiency	-
Pump nominal power [W]	-

Notes

Photovoltaic systems

(Multiplier) Name	(1) PV
Area [m2]	-
Module type	-
Peak power [kWp]	0.75
Orientation	North
Inclination [deg]	0
Overshading	None or very little (<20%)
Ventilation	Moderately ventilated modules

Notes

Heating, ventilation, and air conditioning systems	
Name	HEATING
Type	Split or multi-split system
Heat source	Heat pump (electric): air source
Heating fuel type	Grid Supplied Electricity
Heat generator seasonal efficiency	4
Uses CHP	NO
Variable speed pumping type	-
Heat generator radiant efficiency	-
Integral fan power [W/kW]	-
Cooling generator type	Heat pump (electric)
Cooling fuel type	Grid Supplied Electricity
Cooling generator seasonal EER	4.5
Cooling generator nominal EER	4.5
Mixed-mode cooling operation	NO
Heat recovery system	-
Heat recovery seasonal efficiency	-
Variable heat recovery efficiency	-
Specific fan power [W/(l/s)]	-
Air leakage via ductwork & AHU [%]	-
Submetering and M&T for this system	NO

Notes

Zone name: Z0/01 WORKSHOP | **Activity:** Workshop - small scale | **Multiplier:** 1

Area [m2]: 52.24 | **Height [m]:** 3 | **Air permeability @ 50pa [m3/hm2]:** 5

HVAC system, ventilation, and exhaust

Name	HEATING
Destratification fans	NO
Ventilation type	Natural
SFP for local mechanical supply & extract [W/(l/s)]	-
Heat Recovery system	-
Heat recovery seasonal efficiency	-
Variable heat recovery efficiency	-
Local mechanical exhaust	NO
Exhaust air flow rate [l/s.m2]	-
SFP for mechanical exhaust [W/(l/s)]	-
Exhaust fans location	-
SFP for system terminal units [W/(l/s)]	-
Demand-controlled ventilation	None
Flow regulation type for ventilation control	-
Night cooling maximum hours [hours/month]	-
Night cooling maximum air flow rate [l/s.m2]	-
SFP for night cooling [W/(l/s)]	-

General Lighting and controls

Design illuminance [Lux]	300
Total power [W]	-
Lamp & ballast efficacy [lm/W]	140
Light output ratio	1
Lamp type	-
Air-extracting luminaires	NO
Controls	MANUAL
Type of photoelectric control	-
Constant illumincance control	NO
Controls parasitic power [W/m2]	-
Automatic zoning for daylight	YES
Occupancy sensing	NONE
Occupancy sensing parasitic power [W/m2]	-

Display lighting

Efficient lamps	NO
Lamp & ballast efficacy [lm/W]	-
Time switching	NO

Thermal bridges Psi values [W/mK]

Junction type	Metal clad	Not metal clad
Roof-wall	0.1	0.18
Wall-ground floor	1.725	0.24
Wall-wall (corner)	0.004	0.041
Wall-not ground floor	0	0.11
Lintel (window/door)	0.49	0.423
Sill (window)	0.06	0.023
Jamb (window/door)	0.03	0.019

Hot water system

Name	INSTANT HWS
Dead leg length in this zone [m]	0

Shell & core

Shell area for fit-out	-

Envelopes

(Multiplier) Name	(1) Z0/01 WORKSHOP/s	(1) Z0/01 WORKSHOP/ei	(1) Z0/01 WORKSHOP/n	(1) Z0/01 WORKSHOP/w	(1) Z0/01 WORKSHOP/f	(1) Z0/01 WORKSHOP/s.1	(1) Z0/01 WORKSHOP/n.1	(1) Z0/01 WORKSHOP/ci
Type	Wall	Wall	Wall	Wall	Floor or Ceiling	Wall	Wall	Floor or Ceiling
Area [m2]	12.53	26.25	12.53	26.65	52.24	5.37	5.37	52.24
Orientation	South	East	North	West	Horizontal	South	North	Horizontal
Adjacent space	Exterior	Conditioned	Exterior	Conditioned	Underground	Exterior	Exterior	Conditioned
Construction name	CAVITY	PARTY FF	CAVITY	PARTY FF	GF	MCS 150MM QUADCORE	MCS 150MM QUADCORE	NT FLOOR/CEILING

Windows & rooflights

(Multiplier) Name	(1) Z0/01 WORKSHOP/s/g
In envelope	Z0/01 WORKSHOP/s
Area [m2]	3.78
Glazing name	WINDOW AND DOOR
Shading position	None (no shading)
Shading colour	-
Shading translucency	-
Transmission factor	1
Frame / Aspect ratios	0.42 / 1.17

Doors

(Multiplier) Name	(1) CD
In envelope	Z0/01 WORKSHOP/s
Area [m2]	7.5
Type	Vehicle access
Construction name	CD

Notes

Zone name: Z1/01 WC | **Activity:** Toilet | **Multiplier:** 1

Area [m2]: 4.73 | **Height [m]:** 2.53 | **Air permeability @ 50pa [m3/hm2]:** 5

HVAC system, ventilation, and exhaust

Name	HEATING
Destratification fans	NO
Ventilation type	Natural
SFP for local mechanical supply & extract [W/(l/s)]	-
Heat Recovery system	-
Heat recovery seasonal efficiency	-
Variable heat recovery efficiency	-
Local mechanical exhaust	YES
Exhaust air flow rate [l/s.m2]	7
SFP for mechanical exhaust [W/(l/s)]	0.3
Exhaust fans location	Fan within zone
SFP for system terminal units [W/(l/s)]	-
Demand-controlled ventilation	None
Flow regulation type for ventilation control	-
Night cooling maximum hours [hours/month]	-
Night cooling maximum air flow rate [l/s.m2]	-
SFP for night cooling [W/(l/s)]	-

General Lighting and controls

Design illuminance [Lux]	200
Total power [W]	-
Lamp & ballast efficacy [lm/W]	140
Light output ratio	1
Lamp type	-
Air-extracting luminaires	NO
Controls	MANUAL
Type of photoelectric control	-
Constant illumincance control	NO
Controls parasitic power [W/m2]	-
Automatic zoning for daylight	YES
Occupancy sensing	NONE
Occupancy sensing parasitic power [W/m2]	-

Display lighting

Efficient lamps	NO
Lamp & ballast efficacy [lm/W]	-
Time switching	NO

Thermal bridges Psi values [W/mK]

Junction type	Metal clad	Not metal clad
Roof-wall	0.1	0.18
Wall-ground floor	1.725	0.24
Wall-wall (corner)	0.004	0.041
Wall-not ground floor	0	0.11
Lintel (window/door)	0.49	0.423
Sill (window)	0.06	0.023
Jamb (window/door)	0.03	0.019

Hot water system

Name	INSTANT HWS
Dead leg length in this zone [m]	0

Shell & core

Shell area for fit-out	-

Envelopes

(Multiplier) Name	(1) Z1/01 WC/si	(1) Z1/01 WC/ei	(1) Z1/01 WC/n	(1) Z1/01 WC/wi	(1) Z1/01 WC/c	(1) Z1/01 WC/ci
Type	Wall	Wall	Wall	Wall	Flat roof	Floor or Ceiling
Area [m2]	6.15	5.54	5.7	5.54	4.77	4.73
Orientation	South	East	North	West	Horizontal	Horizontal
Adjacent space	Conditioned	Conditioned	Exterior	Conditioned	Exterior	Conditioned
Construction name	INT WALL	PARTY FF	MCS 150MM QUADCORE	INT WALL	MCS QUADCORE 150MM	INT FLOOR/CEILING

Notes

Zone name: Z1/02 OFFICE | **Activity:** Generic Office Area | **Multiplier:** 1

Area [m2]: 47.61 | **Height [m]:** 2.53 | **Air permeability @ 50pa [m3/hm2]:** 5

HVAC system, ventilation, and exhaust

Name	HEATING
Destratification fans	NO
Ventilation type	Natural
SFP for local mechanical supply & extract [W/(l/s)]	-
Heat Recovery system	-
Heat recovery seasonal efficiency	-
Variable heat recovery efficiency	-
Local mechanical exhaust	NO
Exhaust air flow rate [l/s.m2]	-
SFP for mechanical exhaust [W/(l/s)]	-
Exhaust fans location	-
SFP for system terminal units [W/(l/s)]	-
Demand-controlled ventilation	None
Flow regulation type for ventilation control	-
Night cooling maximum hours [hours/month]	-
Night cooling maximum air flow rate [l/s.m2]	-
SFP for night cooling [W/(l/s)]	-

General Lighting and controls

Design illuminance [Lux]	300
Total power [W]	-
Lamp & ballast efficacy [lm/W]	140
Light output ratio	1
Lamp type	-
Air-extracting luminaires	NO
Controls	MANUAL
Type of photoelectric control	-
Constant illumincance control	NO
Controls parasitic power [W/m2]	-
Automatic zoning for daylight	YES
Occupancy sensing	NONE
Occupancy sensing parasitic power [W/m2]	-

Display lighting

Efficient lamps	NO
Lamp & ballast efficacy [lm/W]	-
Time switching	NO

Thermal bridges Psi values [W/mK]

Junction type	Metal clad	Not metal clad
Roof-wall	0.1	0.18
Wall-ground floor	1.725	0.24
Wall-wall (corner)	0.004	0.041
Wall-not ground floor	0	0.11
Lintel (window/door)	0.49	0.423
Sill (window)	0.06	0.023
Jamb (window/door)	0.03	0.019

Hot water system

Name	INSTANT HWS
Dead leg length in this zone [m]	0

Shell & core

Shell area for fit-out	-

Envelopes

(Multiplier) Name	(1) Z1/02 OFFICE/s	(1) Z1/02 OFFICE/ei	(1) Z1/02 OFFICE/n	(1) Z1/02 OFFICE/w	(1) Z1/02 OFFICE/c	(1) Z1/02 OFFICE/fi	(1) Z1/02 OFFICE/ei.1	(1) Z1/02 OFFICE/ni
Type	Wall	Wall	Wall	Wall	Flat roof	Floor or Ceiling	Wall	Wall
Area [m2]	20.53	20.97	9.41	26.51	48.61	47.61	5.54	6.15
Orientation	South	East	North	West	Horizontal	Horizontal	East	North
Adjacent space	Exterior	Conditioned	Exterior	Conditioned	Exterior	Conditioned	Conditioned	Conditioned
Construction name	MCS 150MM QUADCORE	PARTY FF	MCS 150MM QUADCORE	PARTY FF	MCS QUADCORE 150MM	INT FLOOR/CEILING	INT WALL	INT WALL

Windows & rooflights

(Multiplier) Name	(1) Z1/02 OFFICE/s/g	(1) Z1/02 OFFICE/s/g.1	(1) Z1/02 OFFICE/c/g
In envelope	Z1/02 OFFICE/s	Z1/02 OFFICE/s	Z1/02 OFFICE/c
Area [m2]	0.95	1.89	4.8 (Roof window)
Glazing name	WINDOW AND DOOR	WINDOW AND DOOR	ROOF WINDOW
Shading position	None (no shading)	None (no shading)	None (no shading)
Shading colour	-	-	-
Shading translucency	-	-	-
Transmission factor	1	1	1
Frame / Aspect ratios	0.31 / 1.17	0.27 / 0.58	0.1 / 0.7

Notes

BRUKL Output Document

HM Government

Compliance with England Building Regulations Part L 2021

Project name

6320-SUST-DBS-EMERY ROAD 3

As designed

Date: Tue Aug 12 08:42:39 2025

Administrative information

Building Details

Address: UNIT 3, 6-6 EMERY ROAD, BRISLINGTON, BRISTOL, BS4 5PF

Certifier details

Name: [redacted]

Telephone number: [redacted]

Address: [redacted]

Certification tool

Calculation engine: SBEM

Calculation engine version: v6.1.e.1

Interface to calculation engine: iSBEM

Interface to calculation engine version: v6.1.e

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

Foundation area [m²]: 52.5

The CO_2 emission and primary energy rates of the building must not exceed the targets

Target CO_2 emission rate (TER), $kgCO_2/m^2$annum	3.54	
Building CO_2 emission rate (BER), $kgCO_2/m^2$annum	3.19	
Target primary energy rate (TPER), kWh_{PE}/m^2annum	37.67	
Building primary energy rate (BPER), kWh_{PE}/m^2annum	34.7	
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	$U_{a\text{-Limit}}$	$U_{a\text{-Calc}}$	$U_{i\text{-Calc}}$	First surface with maximum value
Walls*	0.26	0.13	0.15	Z0/01 WORKSHOP/s
Floors	0.18	0.2	0.2	Z0/01 WORKSHOP/f
Pitched roofs	0.16	-	-	No heat loss pitched roofs
Flat roofs	0.18	0.12	0.12	Z1/01 WC/c
Windows** and roof windows	1.6	1.23	1.4	Z0/01 WORKSHOP/s/g
Rooflights***	2.2	-	-	No external rooflights
Personnel doors^	1.6	-	-	No external personnel doors
Vehicle access & similar large doors	1.3	1.5	1.5	CD
High usage entrance doors	3	-	-	No external high usage entrance doors

$U_{a\text{-Limit}}$ = Limiting area-weighted average U-values [W/(m²K)] $U_{i\text{-Calc}}$ = Calculated maximum individual element U-values [W/(m²K)]

$U_{a\text{-Calc}}$ = 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	5

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- HEATING

	Heating efficiency	Cooling efficiency	Radiant efficiency	SFP [W/(l/s)]	HR efficiency
This system	4	4.5	-	-	-
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- INSTANT HWS

	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		
Standard value	0.3	1.1	0.5	2.3	2	0.5	0.5	0.4	1	Zone	Standard
Z1/01 WC	0.3	-	-	-	-	-	-	-	-	-	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
Z0/01 WORKSHOP	140	-	-
Z1/01 WC	140	-	-
Z1/02 OFFICE	140	-	-

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?
Z0/01 WORKSHOP	NO (-74.8%)	NO
Z1/01 WC	N/A	N/A

Zone	Solar gain limit exceeded? (%)	Internal blinds used?
Z1/02 OFFICE	YES (+9.9%)	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?	NO
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^2]	104.6	104.6
External area [m^2]	177.1	177.1
Weather	CAR	CAR
Infiltration [m^3/hm^2@ 50Pa]	5	4
Average conductance [W/K]	52.63	60.42
Average U-value [W/m^2K]	0.3	0.34
Alpha value* [%]	26.21	51.79

* 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/m^2]

	Actual	Notional
Heating	4.56	9.63
Cooling	5.37	2.42
Auxiliary	0.34	0.45
Lighting	10.51	10.57
Hot water	2.14	2.14
Equipment*	28.77	28.77
TOTAL**	**22.91**	**25.2**

* 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^2]

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

Energy & CO_2 Emissions Summary

	Actual	Notional
Heating + cooling demand [MJ/m^2]	122.89	129.82
Primary energy [kWh_{PE}/m^2]	34.7	37.67
Total emissions [kg/m^2]	3.19	3.54

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] Split or multi-split system, [HS] ASHP, [HFT] Electricity, [CFT] Electricity										
	Actual	61.2	61.7	4.6	5.4	0.3	3.73	3.2	4	4.5
	Notional	91.5	38.3	9.6	2.4	0.4	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

6320-SUST-DBS-EMERY ROAD 4 PV

As designed

Date: Tue Aug 12 08:50:28 2025

Administrative information

Building Details

Address: UNIT 4, 6-6 EMERY ROAD, BRISLINGTON, BRISTOL, BS4 5PF

Certifier details

Name: [redacted]

Telephone number: [redacted]

Address: [redacted]

Certification tool

Calculation engine: SBEM

Calculation engine version: v6.1.e.1

Interface to calculation engine: iSBEM

Interface to calculation engine version: v6.1.e

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

Foundation area [m²]: 52.5

The CO_2 emission and primary energy rates of the building must not exceed the targets

Target CO_2 emission rate (TER), $kgCO_2/m^2$annum	4.22	
Building CO_2 emission rate (BER), $kgCO_2/m^2$annum	2.75	
Target primary energy rate (TPER), kWh_{PE}/m^2annum	44.69	
Building primary energy rate (BPER), kWh_{PE}/m^2annum	29.26	
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	$U_{a\text{-}Limit}$	$U_{a\text{-}Calc}$	$U_{i\text{-}Calc}$	First surface with maximum value
Walls*	0.26	0.14	0.15	Z0/01 WORKSHOP/s
Floors	0.18	0.2	0.2	Z0/01 WORKSHOP/f
Pitched roofs	0.16	-	-	No heat loss pitched roofs
Flat roofs	0.18	0.12	0.12	Z1/01 WC/c
Windows** and roof windows	1.6	1.23	1.4	Z0/01 WORKSHOP/s/g
Rooflights***	2.2	-	-	No external rooflights
Personnel doors^	1.6	-	-	No external personnel doors
Vehicle access & similar large doors	1.3	1.5	1.5	CD
High usage entrance doors	3	-	-	No external high usage entrance doors

$U_{a\text{-}Limit}$ = Limiting area-weighted average U-values [W/(m²K)] $U_{i\text{-}Calc}$ = Calculated maximum individual element U-values [W/(m²K)]

$U_{a\text{-}Calc}$ = 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	5

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- HEATING

	Heating efficiency	Cooling efficiency	Radiant efficiency	SFP [W/(l/s)]	HR efficiency
This system	4	4.5	-	-	-
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- INSTANT HWS

	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		
Standard value	0.3	1.1	0.5	2.3	2	0.5	0.5	0.4	1	Zone	Standard
Z1/01 WC	0.3	-	-	-	-	-	-	-	-	-	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
Z0/01 WORKSHOP	140	-	-
Z1/01 WC	140	-	-
Z1/02 OFFICE	140	-	-

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?
Z0/01 WORKSHOP	NO (-74.8%)	NO
Z1/01 WC	N/A	N/A

Zone	Solar gain limit exceeded? (%)	Internal blinds used?
Z1/02 OFFICE	NO (-42.6%)	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?	NO
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^2]	104.6	104.6
External area [m^2]	235.4	235.4
Weather	CAR	CAR
Infiltration [m^3/hm^2@ 50Pa]	5	4
Average conductance [W/K]	60.69	88.65
Average U-value [W/m^2K]	0.26	0.38
Alpha value* [%]	35.26	51.84

* 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/m^2]

	Actual	Notional
Heating	6.1	14.38
Cooling	5.79	3.07
Auxiliary	0.34	0.45
Lighting	10.51	9.78
Hot water	2.14	2.14
Equipment*	28.77	28.77
TOTAL**	**24.88**	**29.82**

* 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^2]

	Actual	Notional
Photovoltaic systems	5.81	0
Wind turbines	0	0
CHP generators	0	0
Solar thermal systems	0	0
Displaced electricity	*5.81*	*0*

Energy & CO_2 Emissions Summary

	Actual	Notional
Heating + cooling demand [MJ/m^2]	148.48	185.27
Primary energy [kWh_{PE}/m^2]	29.26	44.69
Total emissions [kg/m^2]	2.75	4.22

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] Split or multi-split system, [HS] ASHP, [HFT] Electricity, [CFT] Electricity										
	Actual	81.9	66.6	6.1	5.8	0.3	3.73	3.2	4	4.5
	Notional	136.7	48.6	14.4	3.1	0.4	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

SBEM Data Reflection Report — Actual Building

Date: Tue Aug 12 08:50:27 2025

Project name: 6320-SUST-DBS-EMERY ROAD 4-PV **Building type:** Offices and Workshop businesses **Building area [m2]:** 105

General

Building address	UNIT 4 6-6 EMERY ROAD BRISLINGTON BRISTOL BS4 5PF
Building / Foundation areas [m2]	104.58 / 52.5
Weather	CAR
Building rotation [degrees]	0
Maximum no. of storeys	2

Accredited person/Energy assessor

Name	[redacted]
Telephone number	[redacted]
Address	[redacted]
Email	[redacted]

Analysis

Compliance with	England Building Regulations Part L 2021
Asset rating	None
Stage	As designed
Shell & core building	NO
Modular & portable building	NO
Planned time of use	-
Distress purchase	-
Manufacture date of subassemblies	-

Software

SBEM version	v6.1.e.1
Interface to SBEM	iSBEM
Interface version	v6.1.e

Project building services

Electric power factor	<0.9
Submetering and M&T for lighting systems	NO
Emission factor for district heating [kgCO2/kWh]	0.36
Primary energy factor for district heating [kWhPE/kWh]	1.58
New district heating network	NO

Summary of objects

Object type	Total number	Total related area [m2]
Envelope/Door constructions	8	-
Window/Rooflight constructions	2	-
HW systems	1	-
Shower types	1	-
SE systems	0	0
PV systems	1	1e-005
Wind generators	0	-
CHP generators	0	-
Solar collectors	0	0
HVAC systems	1	-
Zones	3	104.58
Envelopes	23	410.55
Doors	1	7.5
Windows/Rooflights	4	11.42

Envelope/Door constructions

Name	U-value [W/m2K]	Adjusted U-value	Km [kJ/m2K]	Metal clad
MCS 150MM QUADCORE	0.13	NO	7	YES
CAVITY	0.15	NO	129	NO
PARTY FF	0.6	NO	191	NO
INT WALL	0.5	NO	9	NO
MCS QUADCORE 150MM	0.12	NO	7	YES
GF	0.2	YES	36	NO
CD	1.5	NO	4.93	NO
INT FLOOR/CEILING	0.6	NO	12	NO

Window/Rooflight constructions

Name	U-value [W/m2K]	Solar transmittance	Light transmittance
WINDOW AND DOOR	1.4	0.85	0.9
ROOF WINDOW	1 (Horizontal)	0.39	0.9

Notes

Hot water systems

Name	INSTANT HWS
Generator Type	Instantaneous hot water only
Fuel type	Grid Supplied Electricity
Seasonal efficiency	1
Uses CHP	NO
Storage system	NO
Storage volume [litres]	-
Insulation thickness [mm]	-
Secondary circulation	-
Circulation losses [W/m]	-
Pump power [kW]	-
Loop length [m]	-
Showers served	Default (x1)

Shower types

Name	Default
Type	Standard flow
Above bath	NO
WWHRS fitted	NO
HR seasonal efficiency	-
Pump nominal power [W]	-

Notes

Photovoltaic systems

(Multiplier) Name	(1) PV
Area [m2]	-
Module type	-
Peak power [kWp]	0.75
Orientation	North
Inclination [deg]	0
Overshading	None or very little (<20%)
Ventilation	Moderately ventilated modules

Notes

Heating, ventilation, and air conditioning systems	
Name	HEATING
Type	Split or multi-split system
Heat source	Heat pump (electric): air source
Heating fuel type	Grid Supplied Electricity
Heat generator seasonal efficiency	4
Uses CHP	NO
Variable speed pumping type	-
Heat generator radiant efficiency	-
Integral fan power [W/kW]	-
Cooling generator type	Heat pump (electric)
Cooling fuel type	Grid Supplied Electricity
Cooling generator seasonal EER	4.5
Cooling generator nominal EER	4.5
Mixed-mode cooling operation	NO
Heat recovery system	-
Heat recovery seasonal efficiency	-
Variable heat recovery efficiency	-
Specific fan power [W/(l/s)]	-
Air leakage via ductwork & AHU [%]	-
Submetering and M&T for this system	NO

Notes

Zone name: Z0/01 WORKSHOP | **Activity:** Workshop - small scale | **Multiplier:** 1

Area [m2]: 52.24 | **Height [m]:** 3 | **Air permeability @ 50pa [m3/hm2]:** 5

HVAC system, ventilation, and exhaust

Name	HEATING
Destratification fans	NO
Ventilation type	Natural
SFP for local mechanical supply & extract [W/(l/s)]	-
Heat Recovery system	-
Heat recovery seasonal efficiency	-
Variable heat recovery efficiency	-
Local mechanical exhaust	NO
Exhaust air flow rate [l/s.m2]	-
SFP for mechanical exhaust [W/(l/s)]	-
Exhaust fans location	-
SFP for system terminal units [W/(l/s)]	-
Demand-controlled ventilation	None
Flow regulation type for ventilation control	-
Night cooling maximum hours [hours/month]	-
Night cooling maximum air flow rate [l/s.m2]	-
SFP for night cooling [W/(l/s)]	-

General Lighting and controls

Design illuminance [Lux]	300
Total power [W]	-
Lamp & ballast efficacy [lm/W]	140
Light output ratio	1
Lamp type	-
Air-extracting luminaires	NO
Controls	MANUAL
Type of photoelectric control	-
Constant illumincance control	NO
Controls parasitic power [W/m2]	-
Automatic zoning for daylight	YES
Occupancy sensing	NONE
Occupancy sensing parasitic power [W/m2]	-

Display lighting

Efficient lamps	NO
Lamp & ballast efficacy [lm/W]	-
Time switching	NO

Thermal bridges Psi values [W/mK]

Junction type	Metal clad	Not metal clad
Roof-wall	0.1	0.18
Wall-ground floor	1.725	0.24
Wall-wall (corner)	0.004	0.041
Wall-not ground floor	0	0.11
Lintel (window/door)	0.49	0.423
Sill (window)	0.06	0.023
Jamb (window/door)	0.03	0.019

Hot water system

Name	INSTANT HWS
Dead leg length in this zone [m]	0

Shell & core

Shell area for fit-out	-

Envelopes

(Multiplier) Name	(1) Z0/01 WORKSHOP/s	(1) Z0/01 WORKSHOP/ei	(1) Z0/01 WORKSHOP/n	(1) Z0/01 WORKSHOP/w	(1) Z0/01 WORKSHOP/f	(1) Z0/01 WORKSHOP/s.1	(1) Z0/01 WORKSHOP/n.1	(1) Z0/01 WORKSHOP/w.1	(1) Z0/01 WORKSHOP/ci
Type	Wall	Wall	Wall	Wall	Floor or Ceiling	Wall	Wall	Wall	Floor or Ceiling
Area [m2]	12.53	26.25	12.53	18.38	52.24	5.37	5.37	7.88	52.24
Orientation	South	West	North	East	Horizontal	South	North	East	Horizontal
Adjacent space	Exterior	Conditioned	Exterior	Exterior	Underground	Exterior	Exterior	Exterior	Conditioned
Construction name	CAVITY	PARTY FF	CAVITY	CAVITY	GF	MCS 150MM QUADCORE	MCS 150MM QUADCORE	MCS 150MM QUADCORE	INT FLOOR/CEILING

Windows & rooflights

(Multiplier) Name	(1) Z0/01 WORKSHOP/s/g
In envelope	Z0/01 WORKSHOP/s
Area [m2]	3.78
Glazing name	WINDOW AND DOOR
Shading position	None (no shading)
Shading colour	-
Shading translucency	-
Transmission factor	1
Frame / Aspect ratios	0.42 / 1.17

Doors

(Multiplier) Name	(1) CD
In envelope	Z0/01 WORKSHOP/s
Area [m2]	7.5
Type	Vehicle access
Construction name	CD

Notes

Zone name: Z1/01 WC | **Activity:** Toilet | **Multiplier:** 1

Area [m2]: 4.73 | **Height [m]:** 2.53 | **Air permeability @ 50pa [m3/hm2]:** 5

HVAC system, ventilation, and exhaust

Name	HEATING
Destratification fans	NO
Ventilation type	Natural
SFP for local mechanical supply & extract [W/(l/s)]	-
Heat Recovery system	-
Heat recovery seasonal efficiency	-
Variable heat recovery efficiency	-
Local mechanical exhaust	YES
Exhaust air flow rate [l/s.m2]	7
SFP for mechanical exhaust [W/(l/s)]	0.3
Exhaust fans location	Fan within zone
SFP for system terminal units [W/(l/s)]	-
Demand-controlled ventilation	None
Flow regulation type for ventilation control	-
Night cooling maximum hours [hours/month]	-
Night cooling maximum air flow rate [l/s.m2]	-
SFP for night cooling [W/(l/s)]	-

General Lighting and controls

Design illuminance [Lux]	200
Total power [W]	-
Lamp & ballast efficacy [lm/W]	140
Light output ratio	1
Lamp type	-
Air-extracting luminaires	NO
Controls	MANUAL
Type of photoelectric control	-
Constant illumincance control	NO
Controls parasitic power [W/m2]	-
Automatic zoning for daylight	YES
Occupancy sensing	NONE
Occupancy sensing parasitic power [W/m2]	-

Display lighting

Efficient lamps	NO
Lamp & ballast efficacy [lm/W]	-
Time switching	NO

Thermal bridges Psi values [W/mK]

Junction type	Metal clad	Not metal clad
Roof-wall	0.1	0.18
Wall-ground floor	1.725	0.24
Wall-wall (corner)	0.004	0.041
Wall-not ground floor	0	0.11
Lintel (window/door)	0.49	0.423
Sill (window)	0.06	0.023
Jamb (window/door)	0.03	0.019

Hot water system

Name	INSTANT HWS
Dead leg length in this zone [m]	0

Shell & core

Shell area for fit-out	-

Envelopes

(Multiplier) Name	(1) Z1/01 WC/si	(1) Z1/01 WC/ei	(1) Z1/01 WC/n	(1) Z1/01 WC/wi	(1) Z1/01 WC/c	(1) Z1/01 WC/ci
Type	Wall	Wall	Wall	Wall	Flat roof	Floor or Ceiling
Area [m2]	6.15	5.54	5.7	5.54	4.77	4.73
Orientation	South	East	North	West	Horizontal	Horizontal
Adjacent space	Conditioned	Conditioned	Exterior	Exterior	Exterior	Conditioned
Construction name	INT WALL	INT WALL	MCS 150MM QUADCORE	CAVITY	MCS QUADCORE 150MM	INT FLOOR/CEILING

Notes

Zone name: Z1/02 OFFICE | **Activity:** Generic Office Area | **Multiplier:** 1

Area [m2]: 47.61 | **Height [m]:** 2.53 | **Air permeability @ 50pa [m3/hm2]:** 5

HVAC system, ventilation, and exhaust

Name	HEATING
Destratification fans	NO
Ventilation type	Natural
SFP for local mechanical supply & extract [W/(l/s)]	-
Heat Recovery system	-
Heat recovery seasonal efficiency	-
Variable heat recovery efficiency	-
Local mechanical exhaust	NO
Exhaust air flow rate [l/s.m2]	-
SFP for mechanical exhaust [W/(l/s)]	-
Exhaust fans location	-
SFP for system terminal units [W/(l/s)]	-
Demand-controlled ventilation	None
Flow regulation type for ventilation control	-
Night cooling maximum hours [hours/month]	-
Night cooling maximum air flow rate [l/s.m2]	-
SFP for night cooling [W/(l/s)]	-

General Lighting and controls

Design illuminance [Lux]	300
Total power [W]	-
Lamp & ballast efficacy [lm/W]	140
Light output ratio	1
Lamp type	-
Air-extracting luminaires	NO
Controls	MANUAL
Type of photoelectric control	-
Constant illumincance control	NO
Controls parasitic power [W/m2]	-
Automatic zoning for daylight	YES
Occupancy sensing	NONE
Occupancy sensing parasitic power [W/m2]	-

Display lighting

Efficient lamps	NO
Lamp & ballast efficacy [lm/W]	-
Time switching	NO

Thermal bridges Psi values [W/mK]

Junction type	Metal clad	Not metal clad
Roof-wall	0.1	0.18
Wall-ground floor	1.725	0.24
Wall-wall (corner)	0.004	0.041
Wall-not ground floor	0	0.11
Lintel (window/door)	0.49	0.423
Sill (window)	0.06	0.023
Jamb (window/door)	0.03	0.019

Hot water system

Name	INSTANT HWS
Dead leg length in this zone [m]	0

Shell & core

Shell area for fit-out	-

Envelopes

(Multiplier) Name	(1) Z1/02 OFFICE/s	(1) Z1/02 OFFICE/ei	(1) Z1/02 OFFICE/n	(1) Z1/02 OFFICE/w	(1) Z1/02 OFFICE/c	(1) Z1/02 OFFICE/fi	(1) Z1/02 OFFICE/ei.1	(1) Z1/02 OFFICE/ni
Type	Wall	Wall	Wall	Wall	Flat roof	Floor or Ceiling	Wall	Wall
Area [m2]	20.53	20.97	9.41	26.51	48.61	47.61	5.54	6.15
Orientation	South	West	North	East	Horizontal	Horizontal	West	North
Adjacent space	Exterior	Conditioned	Exterior	Exterior	Exterior	Conditioned	Conditioned	Conditioned
Construction name	MCS 150MM QUADCORE	PARTY FF	MCS 150MM QUADCORE	MCS 150MM QUADCORE	MCS QUADCORE 150MM	INT FLOOR/CEILING	INT WALL	INT WALL

Windows & rooflights

(Multiplier) Name	(1) Z1/02 OFFICE/s/g	(1) Z1/02 OFFICE/s/g.1	(1) Z1/02 OFFICE/c/g
In envelope	Z1/02 OFFICE/s	Z1/02 OFFICE/s	Z1/02 OFFICE/c
Area [m2]	0.95	1.89	4.8 (Roof window)
Glazing name	WINDOW AND DOOR	WINDOW AND DOOR	ROOF WINDOW
Shading position	None (no shading)	None (no shading)	None (no shading)
Shading colour	-	-	-
Shading translucency	-	-	-
Transmission factor	1	1	1
Frame / Aspect ratios	0.31 / 1.17	0.27 / 0.58	0.1 / 0.7

Notes

BRUKL Output Document

HM Government

Compliance with England Building Regulations Part L 2021

Project name

6320-SUST-DBS-EMERY ROAD 4

As designed

Date: Tue Aug 12 08:48:33 2025

Administrative information

Building Details

Address: UNIT 4, 6-6 EMERY ROAD, BRISLINGTON, BRISTOL, BS4 5PF

Certifier details

Name: [redacted]

Telephone number: [redacted]

Address: [redacted]

Certification tool

Calculation engine: SBEM

Calculation engine version: v6.1.e.1

Interface to calculation engine: iSBEM

Interface to calculation engine version: v6.1.e

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

Foundation area [m²]: 52.5

The CO_2 emission and primary energy rates of the building must not exceed the targets

Target CO_2 emission rate (TER), $kgCO_2/m^2$annum	4.22	
Building CO_2 emission rate (BER), $kgCO_2/m^2$annum	3.48	
Target primary energy rate (TPER), kWh_{PE}/m^2annum	44.69	
Building primary energy rate (BPER), kWh_{PE}/m^2annum	37.76	
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	$U_{a\text{-Limit}}$	$U_{a\text{-Calc}}$	$U_{i\text{-Calc}}$	First surface with maximum value
Walls*	0.26	0.14	0.15	Z0/01 WORKSHOP/s
Floors	0.18	0.2	0.2	Z0/01 WORKSHOP/f
Pitched roofs	0.16	-	-	No heat loss pitched roofs
Flat roofs	0.18	0.12	0.12	Z1/01 WC/c
Windows** and roof windows	1.6	1.23	1.4	Z0/01 WORKSHOP/s/g
Rooflights***	2.2	-	-	No external rooflights
Personnel doors^	1.6	-	-	No external personnel doors
Vehicle access & similar large doors	1.3	1.5	1.5	CD
High usage entrance doors	3	-	-	No external high usage entrance doors

$U_{a\text{-Limit}}$ = Limiting area-weighted average U-values [W/(m²K)] $U_{i\text{-Calc}}$ = Calculated maximum individual element U-values [W/(m²K)]

$U_{a\text{-Calc}}$ = 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	5

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- HEATING

	Heating efficiency	Cooling efficiency	Radiant efficiency	SFP [W/(l/s)]	HR efficiency
This system	4	4.5	-	-	-
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- INSTANT HWS

	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		
Standard value	0.3	1.1	0.5	2.3	2	0.5	0.5	0.4	1	Zone	Standard
Z1/01 WC	0.3	-	-	-	-	-	-	-	-	-	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
Z0/01 WORKSHOP	140	-	-
Z1/01 WC	140	-	-
Z1/02 OFFICE	140	-	-

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?
Z0/01 WORKSHOP	NO (-74.8%)	NO
Z1/01 WC	N/A	N/A

Zone	Solar gain limit exceeded? (%)	Internal blinds used?
Z1/02 OFFICE	NO (-42.6%)	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?	NO
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^2]	104.6	104.6
External area [m^2]	235.4	235.4
Weather	CAR	CAR
Infiltration [m^3/hm^2@ 50Pa]	5	4
Average conductance [W/K]	60.69	88.65
Average U-value [W/m^2K]	0.26	0.38
Alpha value* [%]	35.26	51.84

* 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/m^2]

	Actual	Notional
Heating	6.1	14.38
Cooling	5.79	3.07
Auxiliary	0.34	0.45
Lighting	10.51	9.78
Hot water	2.14	2.14
Equipment*	28.77	28.77
TOTAL**	**24.88**	**29.82**

* 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^2]

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

Energy & CO_2 Emissions Summary

	Actual	Notional
Heating + cooling demand [MJ/m^2]	148.48	185.27
Primary energy [kWh_{PE}/m^2]	37.76	44.69
Total emissions [kg/m^2]	3.48	4.22

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] Split or multi-split system, [HS] ASHP, [HFT] Electricity, [CFT] Electricity										
	Actual	81.9	66.6	6.1	5.8	0.3	3.73	3.2	4	4.5
	Notional	136.7	48.6	14.4	3.1	0.4	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

6320-SUST-DBS-EMERY ROAD 5

As designed

Date: Tue Aug 12 09:06:52 2025

Administrative information

Building Details

Address: UNIT 5, 6-6 EMERY ROAD, BRISLINGTON, BRISTOL, BS4 5PF

Certification tool

Calculation engine: SBEM

Calculation engine version: v6.1.e.1

Interface to calculation engine: iSBEM

Interface to calculation engine version: v6.1.e

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

Certifier details

Name: [redacted]

Telephone number: [redacted]

Address: [redacted]

Foundation area [m²]: 52.5

The CO_2 emission and primary energy rates of the building must not exceed the targets

Target CO_2 emission rate (TER), $kgCO_2/m^2$annum	3.92	
Building CO_2 emission rate (BER), $kgCO_2/m^2$annum	2.75	
Target primary energy rate (TPER), kWh_{PE}/m^2annum	41.76	
Building primary energy rate (BPER), kWh_{PE}/m^2annum	29.31	
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	$U_{a\text{-Limit}}$	$U_{a\text{-Calc}}$	$U_{i\text{-Calc}}$	First surface with maximum value
Walls*	0.26	0.14	0.15	Z0/01 WORKSHOP/s
Floors	0.18	0.2	0.2	Z0/01 WORKSHOP/f
Pitched roofs	0.16	-	-	No heat loss pitched roofs
Flat roofs	0.18	0.12	0.12	Z1/01 WC/c
Windows** and roof windows	1.6	1.2	1.4	Z0/01 WORKSHOP/s/g
Rooflights***	2.2	-	-	No external rooflights
Personnel doors^	1.6	-	-	No external personnel doors
Vehicle access & similar large doors	1.3	1.5	1.5	CD
High usage entrance doors	3	-	-	No external high usage entrance doors

$U_{a\text{-Limit}}$ = Limiting area-weighted average U-values [W/(m²K)] $U_{i\text{-Calc}}$ = Calculated maximum individual element U-values [W/(m²K)]

$U_{a\text{-Calc}}$ = 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	5

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- HEATING

	Heating efficiency	Cooling efficiency	Radiant efficiency	SFP [W/(l/s)]	HR efficiency
This system	4	4.5	-	-	-
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- INSTANT HWS

	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		
Standard value	0.3	1.1	0.5	2.3	2	0.5	0.5	0.4	1	Zone	Standard
Z1/01 WC	0.3	-	-	-	-	-	-	-	-	-	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
Z0/01 WORKSHOP	140	-	-
Z1/01 WC	140	-	-
Z1/02 OFFICE	140	-	-

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?
Z0/01 WORKSHOP	NO (-88.3%)	NO
Z1/01 WC	N/A	N/A

Zone	Solar gain limit exceeded? (%)	Internal blinds used?
Z1/02 OFFICE	NO (-14.4%)	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?	NO
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^2]	104.6	104.6
External area [m^2]	189.9	189.9
Weather	CAR	CAR
Infiltration [m^3/hm^2@ 50Pa]	5	4
Average conductance [W/K]	52.73	64.3
Average U-value [W/m^2K]	0.28	0.34
Alpha value* [%]	38.77	58.99

* 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/m^2]

	Actual	Notional
Heating	5.79	11.1
Cooling	6.15	2.68
Auxiliary	0.34	0.45
Lighting	10.5	11.58
Hot water	2.14	2.14
Equipment*	28.77	28.77
TOTAL**	**24.91**	**27.95**

* 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^2]

	Actual	Notional
Photovoltaic systems	5.81	0
Wind turbines	0	0
CHP generators	0	0
Solar thermal systems	0	0
Displaced electricity	*5.81*	*0*

Energy & CO_2 Emissions Summary

	Actual	Notional
Heating + cooling demand [MJ/m^2]	148.41	147.88
Primary energy [kWh_{PE}/m^2]	29.31	41.76
Total emissions [kg/m^2]	2.75	3.92

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 SSEEF	Cool SSEER	Heat gen SEFF	Cool gen SEER
[ST] Split or multi-split system, [HS] ASHP, [HFT] Electricity, [CFT] Electricity										
	Actual	77.6	70.8	5.8	6.2	0.3	3.73	3.2	4	4.5
	Notional	105.5	42.4	11.1	2.7	0.4	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

SBEM Data Reflection Report — Actual Building

Date: Tue Aug 12 09:06:51 2025

Project name: 6320-SUST-DBS-EMERY ROAD 5 **Building type:** Offices and Workshop businesses **Building area [m2]:** 105

General

Building address	UNIT 5 6-6 EMERY ROAD BRISLINGTON BRISTOL BS4 5PF
Building / Foundation areas [m2]	104.58 / 52.5
Weather	CAR
Building rotation [degrees]	0
Maximum no. of storeys	2

Accredited person/Energy assessor

Name	[redacted]
Telephone number	[redacted]
Address	[redacted]
Email	[redacted]

Analysis

Compliance with	England Building Regulations Part L 2021
Asset rating	None
Stage	As designed
Shell & core building	NO
Modular & portable building	NO
Planned time of use	-
Distress purchase	-
Manufacture date of subassemblies	-

Software

SBEM version	v6.1.e.1
Interface to SBEM	iSBEM
Interface version	v6.1.e

Project building services

Electric power factor	<0.9
Submetering and M&T for lighting systems	NO
Emission factor for district heating [kgCO2/kWh]	0.36
Primary energy factor for district heating [kWhPE/kWh]	1.58
New district heating network	NO

Summary of objects

Object type	Total number	Total related area [m2]
Envelope/Door constructions	8	-
Window/Rooflight constructions	2	-
HW systems	1	-
Shower types	1	-
SE systems	0	0
PV systems	1	1e-005
Wind generators	0	-
CHP generators	0	-
Solar collectors	0	0
HVAC systems	1	-
Zones	3	104.58
Envelopes	24	424.95
Doors	1	7.5
Windows/Rooflights	4	9.76

Envelope/Door constructions

Name	U-value [W/m2K]	Adjusted U-value	Km [kJ/m2K]	Metal clad
MCS 150MM QUADCORE	0.13	NO	7	YES
CAVITY	0.15	NO	129	NO
PARTY FF	0.6	NO	191	NO
INT WALL	0.5	NO	9	NO
MCS QUADCORE 150MM	0.12	NO	7	YES
GF	0.2	YES	36	NO
CD	1.5	NO	4.93	NO
INT FLOOR/CEILING	0.6	NO	12	NO

Window/Rooflight constructions

Name	U-value [W/m2K]	Solar transmittance	Light transmittance
WINDOW AND DOOR	1.4	0.85	0.9
ROOF WINDOW	1 (Horizontal)	0.39	0.9

Notes

Hot water systems

Name	INSTANT HWS
Generator Type	Instantaneous hot water only
Fuel type	Grid Supplied Electricity
Seasonal efficiency	1
Uses CHP	NO
Storage system	NO
Storage volume [litres]	-
Insulation thickness [mm]	-
Secondary circulation	-
Circulation losses [W/m]	-
Pump power [kW]	-
Loop length [m]	-
Showers served	Default (x1)

Shower types

Name	Default
Type	Standard flow
Above bath	NO
WWHRS fitted	NO
HR seasonal efficiency	-
Pump nominal power [W]	-

Notes

Photovoltaic systems

(Multiplier) Name	(1) PV
Area [m2]	-
Module type	-
Peak power [kWp]	0.75
Orientation	North
Inclination [deg]	0
Overshading	None or very little (<20%)
Ventilation	Moderately ventilated modules

Notes

Heating, ventilation, and air conditioning systems	
Name	HEATING
Type	Split or multi-split system
Heat source	Heat pump (electric): air source
Heating fuel type	Grid Supplied Electricity
Heat generator seasonal efficiency	4
Uses CHP	NO
Variable speed pumping type	-
Heat generator radiant efficiency	-
Integral fan power [W/kW]	-
Cooling generator type	Heat pump (electric)
Cooling fuel type	Grid Supplied Electricity
Cooling generator seasonal EER	4.5
Cooling generator nominal EER	4.5
Mixed-mode cooling operation	NO
Heat recovery system	-
Heat recovery seasonal efficiency	-
Variable heat recovery efficiency	-
Specific fan power [W/(l/s)]	-
Air leakage via ductwork & AHU [%]	-
Submetering and M&T for this system	NO

Notes

Zone name: Z0/01 WORKSHOP | **Activity:** Workshop - small scale | **Multiplier:** 1

Area [m2]: 52.24 | **Height [m]:** 3 | **Air permeability @ 50pa [m3/hm2]:** 5

HVAC system, ventilation, and exhaust

Name	HEATING
Destratification fans	NO
Ventilation type	Natural
SFP for local mechanical supply & extract [W/(l/s)]	-
Heat Recovery system	-
Heat recovery seasonal efficiency	-
Variable heat recovery efficiency	-
Local mechanical exhaust	NO
Exhaust air flow rate [l/s.m2]	-
SFP for mechanical exhaust [W/(l/s)]	-
Exhaust fans location	-
SFP for system terminal units [W/(l/s)]	-
Demand-controlled ventilation	None
Flow regulation type for ventilation control	-
Night cooling maximum hours [hours/month]	-
Night cooling maximum air flow rate [l/s.m2]	-
SFP for night cooling [W/(l/s)]	-

General Lighting and controls

Design illuminance [Lux]	300
Total power [W]	-
Lamp & ballast efficacy [lm/W]	140
Light output ratio	1
Lamp type	-
Air-extracting luminaires	NO
Controls	MANUAL
Type of photoelectric control	-
Constant illumincance control	NO
Controls parasitic power [W/m2]	-
Automatic zoning for daylight	YES
Occupancy sensing	NONE
Occupancy sensing parasitic power [W/m2]	-

Display lighting

Efficient lamps	NO
Lamp & ballast efficacy [lm/W]	-
Time switching	NO

Thermal bridges Psi values [W/mK]

Junction type	Metal clad	Not metal clad
Roof-wall	0.1	0.18
Wall-ground floor	1.725	0.24
Wall-wall (corner)	0.004	0.041
Wall-not ground floor	0	0.11
Lintel (window/door)	0.49	0.423
Sill (window)	0.06	0.023
Jamb (window/door)	0.03	0.019

Hot water system

Name	INSTANT HWS
Dead leg length in this zone [m]	0

Shell & core

Shell area for fit-out	-

Envelopes

(Multiplier) Name	(1) Z0/01 WORKSHOP/s	(1) Z0/01 WORKSHOP/ei	(1) Z0/01 WORKSHOP/n	(1) Z0/01 WORKSHOP/w	(1) Z0/01 WORKSHOP/f	(1) Z0/01 WORKSHOP/s.1	(1) Z0/01 WORKSHOP/n.1	(1) Z0/01 WORKSHOP/w.1	(1) Z0/01 WORKSHOP/ci	(1) Z0/01 WORKSHOP/ne
Type	Wall	Wall	Wall	Wall	Floor or Ceiling	Wall	Wall	Wall	Floor or Ceiling	Wall
Area [m2]	13.95	26.33	6.67	10.27	56.56	3.99	1.91	2.93	56.56	13.11
Orientation	South	West	North	East	Horizontal	South	North	East	Horizontal	North-East
Adjacent space	Exterior	Conditioned	Exterior	Exterior	Underground	Exterior	Exterior	Exterior	Conditioned	Exterior
Construction name	CAVITY	PARTY FF	CAVITY	CAVITY	GF	MCS 150MM QUADCORE	MCS 150MM QUADCORE	MCS 150MM QUADCORE	INT FLOOR/CEILING	MCS 150MM QUADCORE

Windows & rooflights

(Multiplier) Name	(1) Z0/01 WORKSHOP/s/g
In envelope	Z0/01 WORKSHOP/s
Area [m2]	2.12
Glazing name	WINDOW AND DOOR
Shading position	None (no shading)
Shading colour	-
Shading translucency	-
Transmission factor	1
Frame / Aspect ratios	0.48 / 2.08

Doors

(Multiplier) Name	(1) CD
In envelope	Z0/01 WORKSHOP/s
Area [m2]	7.5
Type	Vehicle access
Construction name	CD

Notes

Zone name: Z1/01 WC | **Activity:** Toilet | **Multiplier:** 1

Area [m2]: 4.73 | **Height [m]:** 2.53 | **Air permeability @ 50pa [m3/hm2]:** 5

HVAC system, ventilation, and exhaust

Name	HEATING
Destratification fans	NO
Ventilation type	Natural
SFP for local mechanical supply & extract [W/(l/s)]	-
Heat Recovery system	-
Heat recovery seasonal efficiency	-
Variable heat recovery efficiency	-
Local mechanical exhaust	YES
Exhaust air flow rate [l/s.m2]	7
SFP for mechanical exhaust [W/(l/s)]	0.3
Exhaust fans location	Fan within zone
SFP for system terminal units [W/(l/s)]	-
Demand-controlled ventilation	None
Flow regulation type for ventilation control	-
Night cooling maximum hours [hours/month]	-
Night cooling maximum air flow rate [l/s.m2]	-
SFP for night cooling [W/(l/s)]	-

General Lighting and controls

Design illuminance [Lux]	200
Total power [W]	-
Lamp & ballast efficacy [lm/W]	140
Light output ratio	1
Lamp type	-
Air-extracting luminaires	NO
Controls	MANUAL
Type of photoelectric control	-
Constant illumincance control	NO
Controls parasitic power [W/m2]	-
Automatic zoning for daylight	YES
Occupancy sensing	NONE
Occupancy sensing parasitic power [W/m2]	-

Display lighting

Efficient lamps	NO
Lamp & ballast efficacy [lm/W]	-
Time switching	NO

Thermal bridges Psi values [W/mK]

Junction type	Metal clad	Not metal clad
Roof-wall	0.1	0.18
Wall-ground floor	1.725	0.24
Wall-wall (corner)	0.004	0.041
Wall-not ground floor	0	0.11
Lintel (window/door)	0.49	0.423
Sill (window)	0.06	0.023
Jamb (window/door)	0.03	0.019

Hot water system

Name	INSTANT HWS
Dead leg length in this zone [m]	0

Shell & core

Shell area for fit-out	-

Envelopes

(Multiplier) Name	(1) Z1/01 WC/si	(1) Z1/01 WC/ei	(1) Z1/01 WC/n	(1) Z1/01 WC/wi	(1) Z1/01 WC/c	(1) Z1/01 WC/ci
Type	Wall	Wall	Wall	Wall	Flat roof	Floor or Ceiling
Area [m2]	6.29	5.6	5.7	56	4.83	4.77
Orientation	South	East	North	West	Horizontal	Horizontal
Adjacent space	Conditioned	Conditioned	Exterior	Conditioned	Exterior	Conditioned
Construction name	INT WALL	INT WALL	MCS 150MM QUADCORE	PARTY FF	MCS QUADCORE 150MM	INT FLOOR/CEILING

Notes

Zone name: Z1/02 OFFICE | **Activity:** Generic Office Area | **Multiplier:** 1

Area [m2]: 47.61 | **Height [m]:** 2.53 | **Air permeability @ 50pa [m3/hm2]:** 5

HVAC system, ventilation, and exhaust

Name	HEATING
Destratification fans	NO
Ventilation type	Natural
SFP for local mechanical supply & extract [W/(l/s)]	-
Heat Recovery system	-
Heat recovery seasonal efficiency	-
Variable heat recovery efficiency	-
Local mechanical exhaust	NO
Exhaust air flow rate [l/s.m2]	-
SFP for mechanical exhaust [W/(l/s)]	-
Exhaust fans location	-
SFP for system terminal units [W/(l/s)]	-
Demand-controlled ventilation	None
Flow regulation type for ventilation control	-
Night cooling maximum hours [hours/month]	-
Night cooling maximum air flow rate [l/s.m2]	-
SFP for night cooling [W/(l/s)]	-

General Lighting and controls

Design illuminance [Lux]	300
Total power [W]	-
Lamp & ballast efficacy [lm/W]	140
Light output ratio	1
Lamp type	-
Air-extracting luminaires	NO
Controls	MANUAL
Type of photoelectric control	-
Constant illumincance control	NO
Controls parasitic power [W/m2]	-
Automatic zoning for daylight	YES
Occupancy sensing	NONE
Occupancy sensing parasitic power [W/m2]	-

Display lighting

Efficient lamps	NO
Lamp & ballast efficacy [lm/W]	-
Time switching	NO

Thermal bridges Psi values [W/mK]

Junction type	Metal clad	Not metal clad
Roof-wall	0.1	0.18
Wall-ground floor	1.725	0.24
Wall-wall (corner)	0.004	0.041
Wall-not ground floor	0	0.11
Lintel (window/door)	0.49	0.423
Sill (window)	0.06	0.023
Jamb (window/door)	0.03	0.019

Hot water system

Name	INSTANT HWS
Dead leg length in this zone [m]	0

Shell & core

Shell area for fit-out	-

Envelopes

(Multiplier) Name	(1) Z1/02 OFFICE/s	(1) Z1/02 OFFICE/ei	(1) Z1/02 OFFICE/n	(1) Z1/02 OFFICE/w	(1) Z1/02 OFFICE/c	(1) Z1/02 OFFICE/fi	(1) Z1/02 OFFICE/ei.1	(1) Z1/02 OFFICE/ni
Type	Wall	Wall	Wall	Wall	Flat roof	Floor or Ceiling	Wall	Wall
Area [m2]	16.61	15.69	2.25	10.67	40.43	51.94	5.6	6.29
Orientation	South	West	North	East	Horizontal	Horizontal	West	North
Adjacent space	Exterior	Conditioned	Exterior	Exterior	Exterior	Conditioned	Conditioned	Conditioned
Construction name	MCS 150MM QUADCORE	PARTY FF	MCS 150MM QUADCORE	MCS 150MM QUADCORE	MCS QUADCORE 150MM	INT FLOOR/CEILING	INT WALL	INT WALL

Windows & rooflights

(Multiplier) Name	(1) Z1/02 OFFICE/s/g	(1) Z1/02 OFFICE/s/g.1	(1) Z1/02 OFFICE/c/g
In envelope	Z1/02 OFFICE/s	Z1/02 OFFICE/s	Z1/02 OFFICE/c
Area [m2]	0.95	1.89	4.8 (Roof window)
Glazing name	WINDOW AND DOOR	WINDOW AND DOOR	ROOF WINDOW
Shading position	None (no shading)	None (no shading)	None (no shading)
Shading colour	-	-	-
Shading translucency	-	-	-
Transmission factor	1	1	1
Frame / Aspect ratios	0.31 / 1.17	0.27 / 0.58	0.1 / 0.7

Notes

BRUKL Output Document

HM Government

Compliance with England Building Regulations Part L 2021

Project name

6320-SUST-DBS-EMERY ROAD 5

As designed

Date: Tue Aug 12 09:04:27 2025

Administrative information

Building Details

Address: UNIT 5, 6-6 EMERY ROAD, BRISLINGTON, BRISTOL, BS4 5PF

Certifier details

Name: [redacted]

Telephone number: [redacted]

Address: [redacted]

Certification tool

Calculation engine: SBEM

Calculation engine version: v6.1.e.1

Interface to calculation engine: iSBEM

Interface to calculation engine version: v6.1.e

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

Foundation area [m²]: 52.5

The CO_2 emission and primary energy rates of the building must not exceed the targets

Target CO_2 emission rate (TER), $kgCO_2/m^2annum$	3.92	
Building CO_2 emission rate (BER), $kgCO_2/m^2annum$	3.49	
Target primary energy rate (TPER), kWh_{PE}/m^2annum	41.76	
Building primary energy rate (BPER), kWh_{PE}/m^2annum	37.81	
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	$U_{a\text{-}Limit}$	$U_{a\text{-}Calc}$	$U_{i\text{-}Calc}$	First surface with maximum value
Walls*	0.26	0.14	0.15	Z0/01 WORKSHOP/s
Floors	0.18	0.2	0.2	Z0/01 WORKSHOP/f
Pitched roofs	0.16	-	-	No heat loss pitched roofs
Flat roofs	0.18	0.12	0.12	Z1/01 WC/c
Windows** and roof windows	1.6	1.2	1.4	Z0/01 WORKSHOP/s/g
Rooflights***	2.2	-	-	No external rooflights
Personnel doors^	1.6	-	-	No external personnel doors
Vehicle access & similar large doors	1.3	1.5	1.5	CD
High usage entrance doors	3	-	-	No external high usage entrance doors

$U_{a\text{-}Limit}$ = Limiting area-weighted average U-values [W/(m²K)] $U_{i\text{-}Calc}$ = Calculated maximum individual element U-values [W/(m²K)]

$U_{a\text{-}Calc}$ = 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	5

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- HEATING

	Heating efficiency	Cooling efficiency	Radiant efficiency	SFP [W/(l/s)]	HR efficiency
This system	4	4.5	-	-	-
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- INSTANT HWS

	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		
Standard value	0.3	1.1	0.5	2.3	2	0.5	0.5	0.4	1	Zone	Standard
Z1/01 WC	0.3	-	-	-	-	-	-	-	-	-	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
Z0/01 WORKSHOP	140	-	-
Z1/01 WC	140	-	-
Z1/02 OFFICE	140	-	-

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?
Z0/01 WORKSHOP	NO (-88.3%)	NO
Z1/01 WC	N/A	N/A

Zone	Solar gain limit exceeded? (%)	Internal blinds used?
Z1/02 OFFICE	NO (-14.4%)	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?	NO
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^2]	104.6	104.6
External area [m^2]	189.9	189.9
Weather	CAR	CAR
Infiltration [m^3/hm^2@ 50Pa]	5	4
Average conductance [W/K]	52.73	64.3
Average U-value [W/m^2K]	0.28	0.34
Alpha value* [%]	38.77	58.99

* 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/m^2]

	Actual	Notional
Heating	5.79	11.1
Cooling	6.15	2.68
Auxiliary	0.34	0.45
Lighting	10.5	11.58
Hot water	2.14	2.14
Equipment*	28.77	28.77
TOTAL**	**24.91**	**27.95**

* 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^2]

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

Energy & CO_2 Emissions Summary

	Actual	Notional
Heating + cooling demand [MJ/m^2]	148.41	147.88
Primary energy [kWh_{PE}/m^2]	37.81	41.76
Total emissions [kg/m^2]	3.49	3.92

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 SSEEF	Cool SSEER	Heat gen SEFF	Cool gen SEER
[ST] Split or multi-split system, [HS] ASHP, [HFT] Electricity, [CFT] Electricity										
	Actual	77.6	70.8	5.8	6.2	0.3	3.73	3.2	4	4.5
	Notional	105.5	42.4	11.1	2.7	0.4	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