BRUKL Output Document

HM Government

Compliance with England Building Regulations Part L 2021

Project name

Reading Police Station- Landlord

As designed

Date: Wed Apr 01 15:50:07 2026

Administrative information

Building Details

Address: Address 1, City, Postcode

Certifier details

Name: Name

Telephone number: Phone

Address: Street Address, City, Postcode

Certification tool

Calculation engine: Apache

Calculation engine version: 7.0.27

Interface to calculation engine: IES Virtual Environment

Interface to calculation engine version: 7.0.27

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

Foundation area [m²]: 271.13

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

Target CO_2 emission rate (TER), $kgCO_2/m^2.annum$	1.26	
Building CO_2 emission rate (BER), $kgCO_2/m^2.annum$	1.14	
Target primary energy rate (TPER), $kWh_{PE}/m^2.annum$	13.75	
Building primary energy rate (BPER), $kWh_{PE}/m^2.annum$	12.65	
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	0.16	0.26	GF000013:Surf[9]
Floors	0.18	0.1	0.15	GF00004A:Surf[13]
Pitched roofs	0.16	-	-	No pitched roofs in building
Flat roofs	0.18	0.1	0.1	BS000002:Surf[1]
Windows** and roof windows	1.6	1.2	1.21	GF000005:Surf[2]
Rooflights***	2.2	-	-	No roof lights in building
Personnel doors^	1.6	1	1	BS000001:Surf[1]
Vehicle access & similar large doors	1.3	-	-	No vehicle access doors in building
High usage entrance doors	3	-	-	No high usage entrance doors in building

$U_{a\text{-}Limit}$ = 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	3

Building services

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

Whole building lighting automatic monitoring & targeting with alarms for out-of-range values	YES
Whole building electric power factor achieved by power factor correction	>0.95

1- WSHP VRF

	Heating efficiency	Cooling efficiency	Radiant efficiency	SFP [W/(l/s)]	HR efficiency
This system	2.64	3.21	0	-	0.75
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- Direct electric DHW

	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**
GF Block B Resi Amenity	-	-	-	1.2	-	-	-	-	-	-	N/A
GF Block B Community	-	-	-	1.2	-	-	-	-	-	-	N/A
GF Block A Resi Amenity	-	-	-	1.2	-	-	-	-	-	-	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
Basement Sprinkler & Wet Riser Plant	125	-	-
Basement Car Park	125	-	-
Basement Life Safety Switchroom	125	-	-
Basement Generator Rm	125	-	-
Basement Resi Parcel Rm 1	125	-	-
Basement Comms Rm	125	-	-
Basement Refuse Store 1	125	-	-

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
Basement Corridor 2	125	-	-
Basement Refuse Store 2	125	-	-
Basement Corridor 3	125	-	-
Basement Car Park	120	-	-
Basement Resi Bike Store 2	125	-	-
Basement Resi Sprinkler Tank	125	-	-
Basement Resi Parcel Rm 2	125	-	-
Basement Refuse Store 3	125	-	-
Basement Resi Bike Store 3	125	-	-
Basement Refuse Store 4	125	-	-
Basement Cold Water Tank Rm	125	-	-
Basement Corridor 5	125	-	-
Basement Stairwell 1	150	-	-
Basement Lift Lobby 1	125	-	-
Basement Stairwell 2	150	-	-
Basement Lift Lobby 2	125	-	-
Basement Stairwell 3	150	-	-
Basement Lift Lobby 3	125	-	-
Basement Stairwell 4	150	-	-
Basement Lift Lobby 4	125	-	-
Basement Stairwell 5	150	-	-
GF Block B Stairwell 1	150	-	-
GF Block B Lift Lobby 2	125	-	-
GF Block B Lift Lobby 1	125	-	-
GF Block B Resi Amenity	125	-	-
GF Block B Stairwell 2	150	-	-
GF Block B Community	125	-	-
L1 Block B Lift Lobby 2	125	-	-
L1 Block B Lift Lobby 1	125	-	-
L1 Block B Stairwell 1	150	-	-
L1 Block B Stairwell 2	150	-	-
L1 Block B Corridor 1	125	-	-
L1 Block B Corridor 2	125	-	-
L2 Block B Lift Lobby 2	125	-	-
L3 Block B Lift Lobby 2	125	-	-
L4 Block B Lift Lobby 2	125	-	-
L5 Block B Lift Lobby 2	125	-	-
L6 Block B Lift Lobby 2	125	-	-
L7 Block B Lift Lobby 2	125	-	-
L8 Block B Lift Lobby 2	125	-	-
L9 Block B Lift Lobby 2	125	-	-
L10 Block B Lift Lobby 2	125	-	-
L11 Block B Lift Lobby 2	125	-	-

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
L2 Block B Lift Lobby 1	125	-	-
L3 Block B Lift Lobby 1	125	-	-
L4 Block B Lift Lobby 1	125	-	-
L5 Block B Lift Lobby 1	125	-	-
L6 Block B Lift Lobby 1	125	-	-
L7 Block B Lift Lobby 1	125	-	-
L8 Block B Lift Lobby 1	125	-	-
L9 Block B Lift Lobby 1	125	-	-
L10 Block B Lift Lobby 1	125	-	-
L11 Block B Lift Lobby 1	125	-	-
L2 Block B Stairwell 1	150	-	-
L3 Block B Stairwell 1	150	-	-
L4 Block B Stairwell 1	150	-	-
L5 Block B Stairwell 1	150	-	-
L6 Block B Stairwell 1	150	-	-
L7 Block B Stairwell 1	150	-	-
L8 Block B Stairwell 1	150	-	-
L9 Block B Stairwell 1	150	-	-
L10 Block B Stairwell 1	150	-	-
L11 Block B Stairwell 1	150	-	-
L2 Block B Stairwell 2	150	-	-
L3 Block B Stairwell 2	150	-	-
L4 Block B Stairwell 2	150	-	-
L5 Block B Stairwell 2	150	-	-
L6 Block B Stairwell 2	150	-	-
L7 Block B Stairwell 2	150	-	-
L8 Block B Stairwell 2	150	-	-
L9 Block B Stairwell 2	150	-	-
L10 Block B Stairwell 2	150	-	-
L11 Block B Stairwell 2	150	-	-
L2 Block B Corridor 1	125	-	-
L3 Block B Corridor 1	125	-	-
L4 Block B Corridor 1	125	-	-
L5 Block B Corridor 1	125	-	-
L6 Block B Corridor 1	125	-	-
L7 Block B Corridor 1	125	-	-
L8 Block B Corridor 1	125	-	-
L9 Block B Corridor 1	125	-	-
L10 Block B Corridor 1	125	-	-
L11 Block B Corridor 1	125	-	-
L2 Block B Corridor 2	125	-	-
L3 Block B Corridor 2	125	-	-
L4 Block B Corridor 2	125	-	-

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
L5 Block B Corridor 2	125	-	-
L6 Block B Corridor 2	125	-	-
L7 Block B Corridor 2	125	-	-
L8 Block B Corridor 2	125	-	-
L9 Block B Corridor 2	125	-	-
L10 Block B Corridor 2	125	-	-
L11 Block B Corridor 2	125	-	-
L12 Block B Lift Lobby 2	125	-	-
L12 Block B Lift Lobby 1	125	-	-
L12 Block B Stairwell 1	150	-	-
L12 Block B Corridor 1	125	-	-
L12 Block B Corridor 2	125	-	-
L12 Block B Stairwell 2	150	-	-
L13 Block B Lift Lobby 2	125	-	-
L13 Block B Lift Lobby 1	125	-	-
L13 Block B Stairwell 1	150	-	-
L13 Block B Corridor 1	125	-	-
L13 Block B Corridor 2	125	-	-
L13 Block B Stairwell 2	150	-	-
L14 Block B Lift Lobby 2	125	-	-
L14 Block B Lift Lobby 1	125	-	-
L14 Block B Stairwell 1	150	-	-
L14 Block B Corridor 1	125	-	-
L14 Block B Corridor 2	125	-	-
L14 Block B Stairwell 2	150	-	-
L15 Block B Lift Lobby 2	125	-	-
L15 Block B Lift Lobby 1	125	-	-
L15 Block B Stairwell 1	150	-	-
L15 Block B Corridor 1	125	-	-
L15 Block B Corridor 2	125	-	-
L15 Block B Stairwell 2	150	-	-
GF Block A Stairwell 1	150	-	-
GF Block A Lift Lobby 1	125	-	-
GF Block A Corridor 1	125	-	-
GF Block A Corridor 2	125	-	-
GF Block A Corridor 3	125	-	-
GF Block A Stairwell 2	150	-	-
GF Block A Corridor 4	125	-	-
GF Block A Stairwell 3	150	-	-
GF Block A Lift Lobby 2	125	-	-
GF Block A Substation 1	125	-	-
GF Block A Substation 2	125	-	-
GF Block A Resi Corridor 7	125	-	-

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
GF Block A Stairwell 4	150	-	-
GF Block A Lift Lobby 3	125	-	-
GF Block A Resi Corridor 8	125	-	-
GF Block A Lift Lobby 4	125	-	-
GF Block A Stairwell 5	150	-	-
GF Block A Resi Lobby 3	125	-	-
GF Block A Lift Lobby 5	125	-	-
GF Block A Stairwell 6	150	-	-
L1 Block A Stairwell 1	150	-	-
L1 Block A Lift Lobby 1	125	-	-
L1 Block A Lift Lobby 4	125	-	-
L1 Block A Lift Lobby 5	125	-	-
L1 Block A Stairwell 5	150	-	-
L1 Block A Corridor 1	125	-	-
L1 Block A Stairwell 2	150	-	-
L1 Block A Corridor 2	125	-	-
L1 Block A Lift Lobby 2	125	-	-
L1 Block A Corridor 3	125	-	-
L1 Block A Lift Lobby 3	125	-	-
L1 Block A Corridor 4	125	-	-
L1 Block A Stairwell 3	150	-	-
L1 Block A Corridor 5	125	-	-
L1 Block A Stairwell 4	150	-	-
L2 Block A Stairwell 1	150	-	-
L2 Block A Lift Lobby 1	125	-	-
L2 Block A Lift Lobby 4	125	-	-
L2 Block A Lift Lobby 5	125	-	-
L2 Block A Stairwell 5	150	-	-
L2 Block A Corridor 1	125	-	-
L2 Block A Stairwell 2	150	-	-
L2 Block A Corridor 2	125	-	-
L2 Block A Lift Lobby 2	125	-	-
L2 Block A Lift Lobby 3	125	-	-
L2 Block A Corridor 4	125	-	-
L2 Block A Stairwell 3	150	-	-
L2 Block A Corridor 5	125	-	-
L2 Block A Stairwell 4	150	-	-
L2 Block A Corridor 3	125	-	-
L3 Block A Stairwell 1	150	-	-
L3 Block A Lift Lobby 1	125	-	-
L3 Block A Lift Lobby 4	125	-	-
L3 Block A Lift Lobby 5	125	-	-
L3 Block A Stairwell 5	150	-	-

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
L3 Block A Corridor 1	125	-	-
L3 Block A Stairwell 2	150	-	-
L3 Block A Corridor 2	125	-	-
L3 Block A Lift Lobby 2	125	-	-
L3 Block A Lift Lobby 3	125	-	-
L3 Block A Corridor 4	125	-	-
L3 Block A Stairwell 3	150	-	-
L3 Block A Corridor 5	125	-	-
L3 Block A Stairwell 4	150	-	-
L3 Block A Corridor 3	125	-	-
L4 Block A Stairwell 1	150	-	-
L4 Block A Lift Lobby 1	125	-	-
L4 Block A Lift Lobby 4	125	-	-
L4 Block A Lift Lobby 5	125	-	-
L4 Block A Stairwell 5	150	-	-
L4 Block A Corridor 1	125	-	-
L4 Block A Stairwell 2	150	-	-
L4 Block A Corridor 2	125	-	-
L4 Block A Lift Lobby 2	125	-	-
L4 Block A Corridor 5	125	-	-
L4 Block A Stairwell 4	150	-	-
L4 Block A Corridor 3	125	-	-
L5 Block A Stairwell 1	150	-	-
L5 Block A Lift Lobby 1	125	-	-
L5 Block A Lift Lobby 4	125	-	-
L5 Block A Lift Lobby 5	125	-	-
L5 Block A Stairwell 5	150	-	-
L5 Block A Corridor 1	125	-	-
L5 Block A Stairwell 2	150	-	-
L5 Block A Corridor 2	125	-	-
L5 Block A Lift Lobby 2	125	-	-
L5 Block A Corridor 5	125	-	-
L5 Block A Stairwell 4	150	-	-
L5 Block A Corridor 3	125	-	-
L5 Block A Corridor 4	125	-	-
L6 Block A Stairwell 1	150	-	-
L6 Block A Lift Lobby 1	125	-	-
L6 Block A Lift Lobby 4	125	-	-
L6 Block A Lift Lobby 5	125	-	-
L6 Block A Stairwell 5	150	-	-
L6 Block A Corridor 1	125	-	-
L6 Block A Stairwell 2	150	-	-
L6 Block A Corridor 2	125	-	-

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
L6 Block A Corridor 5	125	-	-
L6 Block A Stairwell 4	150	-	-
L6 Block A Lift Lobby 2	125	-	-
L7 Block A Stairwell 1	150	-	-
L7 Block A Lift Lobby 1	125	-	-
L7 Block A Corridor 1	125	-	-
L7 Block A Stairwell 2	150	-	-
L7 Block A Corridor 2	125	-	-
L7 Block A Lift Lobby 2	125	-	-
L8 Block A Stairwell 1	150	-	-
L8 Block A Lift Lobby 1	125	-	-
L8 Block A Corridor 1	125	-	-
L8 Block A Stairwell 2	150	-	-
L8 Block A Corridor 2	125	-	-
L8 Block A Lift Lobby 2	125	-	-
L9 Block A Stairwell 1	150	-	-
L9 Block A Lift Lobby 1	125	-	-
L9 Block A Corridor 1	125	-	-
L9 Block A Stairwell 2	150	-	-
L9 Block A Corridor 2	125	-	-
L9 Block A Lift Lobby 2	125	-	-
Basement Resi Bike Store 1	125	-	-
Basement Corridor 1	125	-	-
Basement Corridor 4	125	-	-
Basement LTHW Plant Rm	125	-	-
GF Block B Lobby	125	-	-
GF Block B Lift Lobby	125	-	-
GF Block A Resi Lobby 1	125	-	-
GF Block A Resi Corridor 5	125	-	-
GF Block A Resi Corridor 6	125	-	-
GF Resi LV Switchroom	125	-	-
GF Block A Resi Amenity	125	-	-
GF Block A Lift Lobby 6	125	-	-
GF Block A Resi Lobby 2	125	-	-

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?
Basement Resi Parcel Rm 1	N/A	N/A
Basement Comms Rm	N/A	N/A
Basement Resi Parcel Rm 2	N/A	N/A
GF Block B Resi Amenity	NO (-32.6%)	NO
GF Block B Community	NO (-66.9%)	NO
GF Block A Resi Amenity	NO (-42.1%)	NO

Regulation 25A: Consideration of high efficiency alternative energy systems

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

Technical Data Sheet (Actual vs. Notional Building)

Building Global Parameters

	Actual	Notional
Floor area [m²]	6842	6842
External area [m²]	7129.5	10943.1
Weather	SWI	SWI
Infiltration [m³/hm²@ 50Pa]	3	3
Average conductance [W/K]	1382.93	2906
Average U-value [W/m²K]	0.19	0.27
Alpha value* [%]	10.21	10

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

Building Use

% Area	Building Type
	Retail/Financial and Professional Services
	Restaurants and Cafes/Drinking Establishments/Takeaways
	Offices and Workshop Businesses
	General Industrial and Special Industrial Groups
	Storage or Distribution
	Hotels
	Residential Institutions: Hospitals and Care Homes
	Residential Institutions: Residential Schools
	Residential Institutions: Universities and Colleges
	Secure Residential Institutions
57	**Residential Spaces**
28	**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
14	**Others: Car Parks 24 hrs**
	Others: Stand Alone Utility Block

Energy Consumption by End Use [kWh/m²]

	Actual	Notional
Heating	0.23	0.44
Cooling	2.01	0.61
Auxiliary	0.17	0.1
Lighting	5.89	7.87
Hot water	0.34	0.3
Equipment*	41.32	41.32
TOTAL**	**8.64**	**9.32**

* Energy used by equipment does not count towards the total for consumption or calculating emissions.
** Total is net of any electrical energy displaced by CHP generators, if applicable.

Energy Production by Technology [kWh/m²]

	Actual	Notional
Photovoltaic systems	0	0
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/m²]	18.57	14.5
Primary energy [kWh_{PE}/m²]	12.65	13.75
Total emissions [kg/m²]	1.14	1.26

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	26.1	208.1	3	25.4	2.1	2.46	2.28	2.64	3.21
	Notional	55.6	127.4	5.6	7.6	1.3	2.78	4.63	----	----
[ST] No Heating or Cooling										
	Actual	0	0	0	0	0	0	0	0	0
	Notional	0	0	0	0	0	0	0	----	----

Key to terms

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