BRUKL Output Document

HM Government

Compliance with England Building Regulations Part L 2021

Project name

River Academy Reading

As designed

Date: Fri Aug 29 13:44:32 2025

Administrative information

Building Details

Address: River Academy Reading,

Certifier details

Name: Sean Mills

Telephone number: 01202280062

Address: Aerodrome Studios, 2-8 Airfield Rd,, Christchurch, BH23 3TS

Certification tool

Calculation engine: Apache

Calculation engine version: 7.0.28

Interface to calculation engine: IES Virtual Environment

Interface to calculation engine version: 7.0.28

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

Foundation area [m²]: 3808.18

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

Target CO_2 emission rate (TER), $kgCO_2/m^2.annum$	3.9	
Building CO_2 emission rate (BER), $kgCO_2/m^2.annum$	2.99	
Target primary energy rate (TPER), $kWh_{PE}/m^2.annum$	42.27	
Building primary energy rate (BPER), $kWh_{PE}/m^2.annum$	32.41	
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	0.21	0.21	0G000063:Surf[7]
Floors	0.18	0.17	0.17	0G000065:Surf[0]
Pitched roofs	0.16	-	-	No pitched roofs in building
Flat roofs	0.18	0.15	0.15	0G000065:Surf[1]
Windows** and roof windows	1.6	1.4	1.4	0G000063:Surf[2]
Rooflights***	2.2	1.4	1.4	0G00007F:Surf[3]
Personnel doors^	1.6	1.46	1.46	0G00005D:Surf[2]
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	3.81

Building services

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

Whole building lighting automatic monitoring & targeting with alarms for out-of-range values	YES
Whole building electric power factor achieved by power factor correction	<0.9

1- VAV Electric Heat Pump

	Heating efficiency	Cooling efficiency	Radiant efficiency	SFP [W/(l/s)]	HR efficiency
This system	4.5	6.5	0	0.3	0.8
Standard value	2.5*	4.5**	N/A	2^	N/A
Automatic monitoring & targeting with alarms for out-of-range values for this HVAC system					YES

* Standard shown is for all types >12 kW output, except absorption and gas engine heat pumps.

** Standard shown is for air-cooled chillers >=400 kW. For chillers <400 kW, limiting SEER is 4.

^ Limiting SFP may be increased by the amounts specified in the Approved Documents if the installation includes particular components.

1- VAV Electric Heat Pump

	Water heating efficiency	Storage loss factor [kWh/litre per day]
This building	4.5	-
Standard value	1	N/A

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

General lighting and display lighting	General luminaire	Display light source	
Zone name	**Efficacy [lm/W]**	**Efficacy [lm/W]**	**Power density [W/m²]**
Standard value	95	80	0.3
0GF CPBD	100	-	-
0GF ACTIVITY STUDIO	195	-	-
0GF CPBD	100	-	-
0GF AWC	99	-	-
0GF AWC	99	-	-
0GF CPBD	100	-	-
0GF CIRCULATION	128	-	-
0GF CPBD	100	-	-
0GF CPBD	100	-	-
0GF CPBD	100	-	-
0GF CLASSROOM (	150	-	-
0GF CLASSROOM (	150	-	-
0GF COM REPT	128	-	-
0GF CPBD	100	-	-
0GF CONFERENCE ROOM	150	-	-
0GF CORRIDOR	128	-	-
0GF CORRIDOR	128	-	-
0GF CORRIDOR	128	-	-
0GF CORRIDOR	128	-	-
0GF CORRIDOR	128	-	-
0GF CORRIDOR (KITCHEN)	128	-	-
0GF CORRIDORS	128	-	-

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
0GF CORRIDORS	128	-	-
0GF CORRIDORS	128	-	-
0GF CORRIDORS	128	-	-
0GF CORRIDORS	128	-	-
0GF CORRIDORS	128	-	-
0GF CORRIDORS	128	-	-
0GF CORRIDORS	128	-	-
0GF CORRIDORS	128	-	-
0GF CORRIDORS	128	-	-
0GF CORRIDORS	128	-	-
0GF CORRIDORS	128	-	-
0GF CORRIDORS	128	-	-
0GF CORRIDORS	128	-	-
0GF CORRIDORS	128	-	-
0GF CPBD	100	-	-
0GF DINING	127	-	-
0GF DRAMA ST	100	-	-
0GF DRAMA STUDIO	150	-	-
0GF ENTERPRISE	150	-	-
0GF ENTERPRISE	150	-	-
0GF ENTERPRISE	150	-	-
0GF EXAM OFFICE	123	-	-
0GF EXAM ST	100	-	-
0GF GEN/FIN/SS OFFICE	123	-	-
0GF HEAD OFFICE	123	-	-
0GF HEAD PA (OFFICE)	123	-	-
0GF HYG RM	99	-	-
0GF ICT	150	-	-
0GF ICT	150	-	-
0GF ICT HUB (CBD)	100	-	-
0GF ICT LRC	150	-	-
0GF ICT TECH	123	-	-
0GF INTERVIEW ROOM	123	-	-
0GF KITCHEN DRY STORE	100	-	-
0GF KTICHEN & SERVERY	140	-	-
0GF L. GRP	100	-	-
0GF LIFT	128	-	-
0GF LOBBY	128	-	-
0GF M/S GRP (OFFICE)	123	-	-
0GF M/S GRP (OFFICE)	123	-	-
0GF M/S GRP (OFFICE)	123	-	-
0GF M/S GRP (OFFICE)	123	-	-
0GF M/S GRP (OFFICE)	123	-	-

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
0GF MAN. ST	128	-	-
0GF MI ROOM (OFFICE)	123	-	-
0GF MUS & DR WRM	128	-	-
0GF MUSIC PRACTICE	150	-	-
0GF MUSIC PRACTICE	150	-	-
0GF MUSIC PRACTICE	150	-	-
0GF MUSIC PRACTICE	150	-	-
0GF MUSIC RECITAL	150	-	-
0GF MUSIC STORE	100	-	-
0GF OFF / MTG	123	-	-
0GF OFF/MTG	123	-	-
0GF OFFICE	123	-	-
0GF OFFICE	123	-	-
0GF OFFICE	123	-	-
0GF OFFICE ADMIN AREA (KITCHEN)	123	-	-
0GF P CHG	131	-	-
0GF P CHG	131	-	-
0GF P WC	99	-	-
0GF P WC	99	-	-
0GF PE (Classroom)	150	-	-
0GF PE STORE	100	-	-
0GF PE WRM T ST	123	-	-
0GF PERFORMING ARTS	150	-	-
0GF PREM OFF	123	-	-
0GF PUBLIC WCS	99	-	-
0GF PUBLIC WCS	99	-	-
0GF RECEPTION	150	150	0.9
0GF REPRO	123	-	-
0GF RESOURCE (OFFICE)	123	-	-
0GF SEN SEMINAR	150	-	-
0GF SEN ST	100	-	-
0GF SENCO (OFFICE)	123	-	-
0GF SERVER	123	-	-
0GF SICK	123	-	-
0GF SIXTH FORM SEMINAR	150	-	-
0GF SIXTH FORM SOCIAL	123	-	-
0GF SIXTH FORM STUDY	150	-	-
0GF SPORTS HALL	195	-	-
0GF ST CHG	100	-	-
0GF ST CHG	100	-	-
0GF STAIRS	128	-	-
0GF STAIRS	128	-	-
0GF STAIRS	128	-	-

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
0GF STAIRS	128	-	-
0GF T ST	100	-	-
0GF T ST	100	-	-
0GF T.ST	100	-	-
0GF TEACHING STORE	100	-	-
0GF WC	99	-	-
0GF WC (KITCHEN)	99	-	-
0GF WC (KITCHEN)	99	-	-
0GF WC (KITCHEN)	99	-	-
0GF WRM	123	-	-
0GF WRM	123	-	-
1FF AWC 1	99	-	-
1FF AWC 5	99	-	-
1FF CL ST	100	-	-
1FF CL ST	100	-	-
1FF CNTRL	100	-	-
1FF CORRIDOR	128	-	-
1FF CORRIDOR	128	-	-
1FF CORRIDOR	128	-	-
1FF CORRIDOR	128	-	-
1FF CORRIDOR	128	-	-
1FF CORRIDOR	128	-	-
1FF CORRIDOR	128	-	-
1FF CORRIDOR	128	-	-
1FF DT WRM	100	-	-
1FF ENGLISH	150	-	-
1FF ENGLISH	150	-	-
1FF ENGLISH	150	-	-
1FF ENGLISH	150	-	-
1FF ENGLISH	150	-	-
1FF ENGLISH	150	-	-
1FF ENGLISH	150	-	-
1FF ENGLISH	150	-	-
1FF ENGLISH	150	-	-
1FF ENGLISH	150	-	-
1FF ENGLISH	150	-	-
1FF ENGLISH WRM	123	-	-
1FF ENTANCE LOBBY	128	-	-
1FF ENTERPRISE	150	-	-
1FF ENTERPRISE	150	-	-
1FF ENTERPRISE	150	-	-
1FF ENTERPRISE	150	-	-
1FF ENTERPRISE	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
1FF ENTERPRISE WRM	123	-	-
1FF FOOD ST/PR	100	-	-
1FF FOOD TECHNOLOGY	150	-	-
1FF FOOD TECHNOLOGY	150	-	-
1FF HUMANITIES	150	-	-
1FF HUMANITIES	150	-	-
1FF HUMANITIES	150	-	-
1FF HUMANITIES	150	-	-
1FF ICT	150	-	-
1FF ICT / BUSINESS	150	-	-
1FF ICT 1	150	-	-
1FF KITCH. PLANT	131	-	-
1FF LIFT	128	-	-
1FF LRG GROUP	150	-	-
1FF MFL	150	-	-
1FF MFL	150	-	-
1FF MFL	150	-	-
1FF MFL	150	-	-
1FF MFL	150	-	-
1FF MFL	150	-	-
1FF MFL & HUMS WRM	100	-	-
1FF OFF/MTG	123	-	-
1FF OFFICE	123	-	-
1FF PUBLIC TOILETS	99	-	-
1FF PUBLIC TOILETS	99	-	-
1FF PUBLIC TOILETS	99	-	-
1FF PUBLIC TOILETS	99	-	-
1FF RESISTANT MATERIALS	150	-	-
1FF RM PREP	123	-	-
1FF S GRP	123	-	-
1FF Staff Room (Social)	123	-	-
1FF Staff WC	99	-	-
1FF Staff WC	99	-	-
1FF STAIR	128	-	-
1FF STAIR	128	-	-
1FF STAIR	128	-	-
1FF STAIR	128	-	-
1FF T.ST	100	-	-
1FF T/ST	100	-	-
2SF 3D ART ROOM	150	-	-
2SF ART AND DESIGN RSC	123	-	-
2SF Art St	100	-	-
2SF Art St	100	-	-

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
2SF Art St	100	-	-
2SF Art St	100	-	-
2SF ART WRM	123	-	-
2SF AWC 3	99	-	-
2SF AWC 6	99	-	-
2SF CHEM .ST	100	-	-
2SF CLOSET	100	-	-
2SF CORRIDORS	128	-	-
2SF CORRIDORS	128	-	-
2SF CORRIDORS	128	-	-
2SF CORRIDORS	128	-	-
2SF CORRIDORS	128	-	-
2SF CORRIDORS	128	-	-
2SF CORRIDORS	128	-	-
2SF CORRIDORS	128	-	-
2SF CORRIDORS	128	-	-
2SF CORRIDORS	128	-	-
2SF GENERAL ART	150	-	-
2SF GENERAL ART	150	-	-
2SF GENERAL ART SCIENCE PREP	150	-	-
2SF ICT	150	-	-
2SF ICT	150	-	-
2SF ICT LEARNING AREA	150	-	-
2SF LIFT	128	-	-
2SF MAIN PLANT ROOM	131	-	-
2SF MATHS	150	-	-
2SF MATHS	150	-	-
2SF MATHS	150	-	-
2SF MATHS	150	-	-
2SF MATHS	150	-	-
2SF MATHS	150	-	-
2SF MATHS	150	-	-
2SF MATHS	150	-	-
2SF MATHS	150	-	-
2SF MATHS	150	-	-
2SF MATHS	150	-	-
2SF MATHS	150	-	-
2SF MATHS WRM	123	-	-
2SF OFF/MTG	123	-	-
2SF OFFICE	123	-	-
2SF PWC	99	-	-
2SF PWC	99	-	-
2SF PWC	99	-	-

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
2SF PWC	99	-	-
2SF S. GRP	123	-	-
2SF SCI WRM	123	-	-
2SF SCIENCE	150	-	-
2SF SCIENCE	150	-	-
2SF SCIENCE	150	-	-
2SF SCIENCE	150	-	-
2SF SCIENCE	150	-	-
2SF SCIENCE	150	-	-
2SF SCIENCE	150	-	-
2SF SCIENCE	150	-	-
2SF SCIENCE	150	-	-
2SF SCIENCE LAB 1	155	-	-
2SF SCIENCE LAB 2	155	-	-
2SF STAIR 1	128	-	-
2SF STAIR 2	128	-	-
2SF STAIR 3	128	-	-
2SF STAIR 4	128	-	-
2SF T ST	100	-	-
2SF T ST.	100	-	-
0GF ASSEMBLY HALL	123	-	-
0GF CORRIDORS	128	-	-
0GF CORRIDORS	128	-	-

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?
0GF CPBD	N/A	N/A
0GF ACTIVITY STUDIO	NO (-33.8%)	NO
0GF CPBD	N/A	N/A
0GF AWC	N/A	N/A
0GF AWC	N/A	N/A
0GF CPBD	N/A	N/A
0GF CIRCULATION	N/A	N/A
0GF CPBD	N/A	N/A
0GF CPBD	N/A	N/A
0GF CPBD	N/A	N/A
0GF CLASSROOM (	NO (-7.3%)	NO
0GF CLASSROOM (	NO (-32.5%)	NO
0GF COM REPT	YES (+54.5%)	NO
0GF CPBD	N/A	N/A
0GF CONFERENCE ROOM	NO (-38.5%)	NO
0GF CORRIDOR	NO (-38.4%)	NO
0GF CORRIDOR	NO (-36.3%)	NO

Zone	Solar gain limit exceeded? (%)	Internal blinds used?
0GF CORRIDOR	N/A	N/A
0GF CORRIDOR	N/A	N/A
0GF CORRIDOR	N/A	N/A
0GF CORRIDOR (KITCHEN)	YES (+34%)	NO
0GF CORRIDORS	N/A	N/A
0GF CORRIDORS	N/A	N/A
0GF CORRIDORS	NO (-56%)	NO
0GF CORRIDORS	N/A	N/A
0GF CORRIDORS	N/A	N/A
0GF CORRIDORS	N/A	N/A
0GF CORRIDORS	N/A	N/A
0GF CORRIDORS	N/A	N/A
0GF CORRIDORS	YES (+97.9%)	NO
0GF CORRIDORS	N/A	N/A
0GF CORRIDORS	N/A	N/A
0GF CORRIDORS	N/A	N/A
0GF CORRIDORS	N/A	N/A
0GF CORRIDORS	N/A	N/A
0GF CORRIDORS	N/A	N/A
0GF CPBD	N/A	N/A
0GF DINING	YES (+19.6%)	NO
0GF DRAMA ST	N/A	N/A
0GF DRAMA STUDIO	N/A	N/A
0GF ENTERPRISE	YES (+7.3%)	NO
0GF ENTERPRISE	YES (+7.6%)	NO
0GF ENTERPRISE	YES (+9.1%)	NO
0GF EXAM OFFICE	N/A	N/A
0GF EXAM ST	N/A	N/A
0GF GEN/FIN/SS OFFICE	NO (-42.6%)	NO
0GF HEAD OFFICE	NO (-29.1%)	NO
0GF HEAD PA (OFFICE)	NO (-0.6%)	NO
0GF HYG RM	N/A	N/A
0GF ICT	NO (-41.5%)	NO
0GF ICT	NO (-31.9%)	NO
0GF ICT HUB (CBD)	N/A	N/A
0GF ICT LRC	NO (-3.9%)	NO
0GF ICT TECH	N/A	N/A
0GF INTERVIEW ROOM	N/A	N/A
0GF KITCHEN DRY STORE	N/A	N/A
0GF KTICHEN & SERVERY	YES (+0.1%)	NO
0GF L. GRP	YES (+42.1%)	NO
0GF LIFT	N/A	N/A
0GF LOBBY	YES (+178.3%)	NO
0GF M/S GRP (OFFICE)	N/A	N/A
0GF M/S GRP (OFFICE)	NO (-20.2%)	NO
0GF M/S GRP (OFFICE)	NO (-20.6%)	NO
0GF M/S GRP (OFFICE)	YES (+40.8%)	NO
0GF M/S GRP (OFFICE)	N/A	N/A
0GF MAN. ST	N/A	N/A

Zone	Solar gain limit exceeded? (%)	Internal blinds used?
0GF MI ROOM (OFFICE)	N/A	N/A
0GF MUS & DR WRM	NO (-3.4%)	NO
0GF MUSIC PRACTICE	NO (-64.5%)	NO
0GF MUSIC PRACTICE	NO (-40.9%)	NO
0GF MUSIC PRACTICE	N/A	N/A
0GF MUSIC PRACTICE	N/A	N/A
0GF MUSIC RECITAL	NO (-55.2%)	NO
0GF MUSIC STORE	N/A	N/A
0GF OFF / MTG	NO (-9.1%)	NO
0GF OFF/MTG	NO (-6%)	NO
0GF OFFICE	N/A	N/A
0GF OFFICE	NO (-17.3%)	NO
0GF OFFICE	YES (+17.1%)	NO
0GF OFFICE ADMIN AREA (KITCHEN)	YES (+49.5%)	NO
0GF P CHG	N/A	N/A
0GF P CHG	N/A	N/A
0GF P WC	N/A	N/A
0GF P WC	N/A	N/A
0GF PE (Classroom)	NO (-33.7%)	NO
0GF PE STORE	N/A	N/A
0GF PE WRM T ST	NO (-28.5%)	NO
0GF PERFORMING ARTS	NO (-27.5%)	NO
0GF PREM OFF	N/A	N/A
0GF PUBLIC WCS	N/A	N/A
0GF PUBLIC WCS	N/A	N/A
0GF RECEPTION	N/A	N/A
0GF REPRO	N/A	N/A
0GF RESOURCE (OFFICE)	YES (+22%)	NO
0GF SEN SEMINAR	NO (-16%)	NO
0GF SEN ST	N/A	N/A
0GF SENCO (OFFICE)	N/A	N/A
0GF SERVER	N/A	N/A
0GF SICK	N/A	N/A
0GF SIXTH FORM SEMINAR	NO (-1.8%)	NO
0GF SIXTH FORM SOCIAL	NO (-12.3%)	NO
0GF SIXTH FORM STUDY	NO (-18.5%)	NO
0GF SPORTS HALL	YES (+8.2%)	NO
0GF ST CHG	N/A	N/A
0GF ST CHG	N/A	N/A
0GF STAIRS	NO (-43.7%)	NO
0GF STAIRS	NO (-85.9%)	NO
0GF STAIRS	N/A	N/A
0GF STAIRS	NO (-89.9%)	NO
0GF T ST	N/A	N/A
0GF T ST	N/A	N/A
0GF T.ST	N/A	N/A
0GF TEACHING STORE	N/A	N/A
0GF WC	N/A	N/A
0GF WC (KITCHEN)	YES (+13.8%)	NO

Zone	Solar gain limit exceeded? (%)	Internal blinds used?
0GF WC (KITCHEN)	N/A	N/A
0GF WC (KITCHEN)	N/A	N/A
0GF WRM	N/A	N/A
0GF WRM	NO (-49.8%)	NO
1FF AWC 1	N/A	N/A
1FF AWC 5	N/A	N/A
1FF CL ST	N/A	N/A
1FF CL ST	N/A	N/A
1FF CNTRL	N/A	N/A
1FF CORRIDOR	YES (+24.8%)	NO
1FF CORRIDOR	N/A	N/A
1FF CORRIDOR	N/A	N/A
1FF CORRIDOR	N/A	N/A
1FF CORRIDOR	N/A	N/A
1FF CORRIDOR	NO (-38%)	NO
1FF CORRIDOR	N/A	N/A
1FF CORRIDOR	N/A	N/A
1FF DT WRM	NO (-35.1%)	NO
1FF ENGLISH	NO (-1.9%)	NO
1FF ENGLISH	YES (+6.5%)	NO
1FF ENGLISH	YES (+8.5%)	NO
1FF ENGLISH	YES (+8%)	NO
1FF ENGLISH	N/A	N/A
1FF ENGLISH	N/A	N/A
1FF ENGLISH	N/A	N/A
1FF ENGLISH	N/A	N/A
1FF ENGLISH	NO (-28.1%)	NO
1FF ENGLISH	N/A	N/A
1FF ENGLISH	N/A	N/A
1FF ENGLISH WRM	NO (-57%)	NO
1FF ENTANCE LOBBY	YES (+178.3%)	NO
1FF ENTERPRISE	YES (+18.5%)	NO
1FF ENTERPRISE	YES (+29.1%)	NO
1FF ENTERPRISE	NO (-1.8%)	NO
1FF ENTERPRISE	YES (+21.2%)	NO
1FF ENTERPRISE	NO (-3.9%)	NO
1FF ENTERPRISE WRM	NO (-48.2%)	NO
1FF FOOD ST/PR	NO (-56.9%)	NO
1FF FOOD TECHNOLOGY	NO (-35.3%)	NO
1FF FOOD TECHNOLOGY	NO (-50.3%)	NO
1FF HUMANITIES	YES (+1.5%)	NO
1FF HUMANITIES	NO (-0.4%)	NO
1FF HUMANITIES	NO (-3.4%)	NO
1FF HUMANITIES	NO (-1.6%)	NO
1FF ICT	NO (-37.4%)	NO
1FF ICT / BUSINESS	YES (+17.1%)	NO
1FF ICT 1	NO (-53.4%)	NO
1FF KITCH. PLANT	N/A	N/A
1FF LIFT	N/A	N/A

Zone	Solar gain limit exceeded? (%)	Internal blinds used?
1FF LRG GROUP	N/A	N/A
1FF MFL	YES (+1.2%)	NO
1FF MFL	NO (-52.8%)	NO
1FF MFL	NO (-3.9%)	NO
1FF MFL	NO (-26.7%)	NO
1FF MFL	NO (-1.8%)	NO
1FF MFL	NO (-30.6%)	NO
1FF MFL & HUMS WRM	NO (-30.2%)	NO
1FF OFF/MTG	NO (-9%)	NO
1FF OFFICE	NO (-6%)	NO
1FF PUBLIC TOILETS	N/A	N/A
1FF PUBLIC TOILETS	N/A	N/A
1FF PUBLIC TOILETS	N/A	N/A
1FF PUBLIC TOILETS	N/A	N/A
1FF RESISTANT MATERIALS	NO (-40.6%)	NO
1FF RM PREP	NO (-63.5%)	NO
1FF S GRP	N/A	N/A
1FF Staff Room (Social)	NO (-16.4%)	NO
1FF Staff WC	N/A	N/A
1FF Staff WC	N/A	N/A
1FF STAIR	N/A	N/A
1FF STAIR	NO (-90.9%)	NO
1FF STAIR	NO (-96%)	NO
1FF STAIR	N/A	N/A
1FF T.ST	N/A	N/A
1FF T/ST	N/A	N/A
2SF 3D ART ROOM	NO (-41.4%)	NO
2SF ART AND DESIGN RSC	N/A	N/A
2SF Art St	N/A	N/A
2SF Art St	N/A	N/A
2SF Art St	N/A	N/A
2SF Art St	N/A	N/A
2SF ART WRM	NO (-35.1%)	NO
2SF AWC 3	N/A	N/A
2SF AWC 6	N/A	N/A
2SF CHEM .ST	N/A	N/A
2SF CLOSET	N/A	N/A
2SF CORRIDORS	N/A	N/A
2SF CORRIDORS	N/A	N/A
2SF CORRIDORS	N/A	N/A
2SF CORRIDORS	N/A	N/A
2SF CORRIDORS	NO (-38%)	NO
2SF CORRIDORS	YES (+24.8%)	NO
2SF CORRIDORS	N/A	N/A
2SF CORRIDORS	N/A	N/A
2SF CORRIDORS	N/A	N/A
2SF CORRIDORS	N/A	N/A
2SF GENERAL ART	NO (-38.8%)	NO
2SF GENERAL ART	NO (-52.5%)	NO

Zone	Solar gain limit exceeded? (%)	Internal blinds used?
2SF GENERAL ART SCIENCE PREP	N/A	N/A
2SF ICT	NO (-8.4%)	NO
2SF ICT	NO (-8.4%)	NO
2SF ICT LEARNING AREA	NO (-40.2%)	NO
2SF LIFT	N/A	N/A
2SF MAIN PLANT ROOM	N/A	N/A
2SF MATHS	YES (+29.1%)	NO
2SF MATHS	YES (+21.2%)	NO
2SF MATHS	NO (-50.5%)	NO
2SF MATHS	YES (+17.3%)	NO
2SF MATHS	NO (-30.6%)	NO
2SF MATHS	NO (-1.8%)	NO
2SF MATHS	NO (-1.8%)	NO
2SF MATHS	NO (-3.9%)	NO
2SF MATHS	YES (+17.1%)	NO
2SF MATHS	YES (+18.5%)	NO
2SF MATHS	YES (+1.2%)	NO
2SF MATHS	NO (-3.9%)	NO
2SF MATHS WRM	NO (-48.2%)	NO
2SF OFF/MTG	NO (-6%)	NO
2SF OFFICE	N/A	N/A
2SF PWC	N/A	N/A
2SF PWC	N/A	N/A
2SF PWC	N/A	N/A
2SF PWC	N/A	N/A
2SF S. GRP	N/A	N/A
2SF SCI WRM	N/A	N/A
2SF SCIENCE	NO (-13.3%)	NO
2SF SCIENCE	NO (-3.2%)	NO
2SF SCIENCE	NO (-13.4%)	NO
2SF SCIENCE	NO (-12.6%)	NO
2SF SCIENCE	NO (-48.2%)	NO
2SF SCIENCE	NO (-35%)	NO
2SF SCIENCE	NO (-31.6%)	NO
2SF SCIENCE	N/A	N/A
2SF SCIENCE	NO (-7.1%)	NO
2SF SCIENCE LAB 1	N/A	N/A
2SF SCIENCE LAB 2	N/A	N/A
2SF STAIR 1	N/A	N/A
2SF STAIR 2	N/A	N/A
2SF STAIR 3	NO (-90.9%)	NO
2SF STAIR 4	NO (-96%)	NO
2SF T ST	N/A	N/A
2SF T ST.	N/A	N/A
0GF ASSEMBLY HALL	N/A	N/A
0GF CORRIDORS	NO (-28.4%)	NO
0GF CORRIDORS	NO (-12.4%)	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?	YES
Are any such measures included in the proposed design?	YES

Technical Data Sheet (Actual vs. Notional Building)

Building Global Parameters

	Actual	Notional
Floor area [m²]	11424.5	11424.5
External area [m²]	15068.5	15068.5
Weather	LON	LON
Infiltration [m³/hm²@ 50Pa]	4	3
Average conductance [W/K]	4071.93	4810.96
Average U-value [W/m²K]	0.27	0.32
Alpha value* [%]	25	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
	Residential Spaces
	Non-residential Institutions: Community/Day Centre
	Non-residential Institutions: Libraries, Museums, and Galleries
100	**Non-residential Institutions: Education**
	Non-residential Institutions: Primary Health Care Building
	Non-residential Institutions: Crown and County Courts
	General Assembly and Leisure, Night Clubs, and Theatres
	Others: Passenger Terminals
	Others: Emergency Services
	Others: Miscellaneous 24hr Activities
	Others: Car Parks 24 hrs
	Others: Stand Alone Utility Block

Energy Consumption by End Use [kWh/m²]

	Actual	Notional
Heating	2.96	2.44
Cooling	2.06	2.77
Auxiliary	9	11.97
Lighting	4.91	6.54
Hot water	2.42	4.86
Equipment*	21.38	21.38
TOTAL**	**21.34**	**28.59**

* 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]	65.52	70.65
Primary energy [kWh_{PE}/m²]	32.41	42.27
Total emissions [kg/m²]	2.99	3.9

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] Single-duct VAV, [HS] ASHP, [HFT] Electricity, [CFT] Electricity										
	Actual	32.7	32.9	3	2.1	9	3.07	4.43	4.5	6.5
	Notional	24.4	46.2	2.4	2.8	11.8	2.78	4.63	----	----

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