

Project name

St Andrews Church

As designed

Date: Wed Jun 18 11:02:44 2025

Administrative information

Building Details

Address: St Andrews Church, Keighley, BD21 5HT

Certifier details

Name: Nicolas Walker

Telephone number: 07980130861

Address: Walker Energy Analysis, Spaces Acero 1
Concourse Way, Sheffield, S1 2BJ

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]: 344.25The CO₂ emission and primary energy rates of the building must not exceed the targets

Target CO ₂ emission rate (TER), kgCO ₂ /m ² annum	4.07
Building CO ₂ emission rate (BER), kgCO ₂ /m ² annum	3.8
Target primary energy rate (TPER), kWh _{PE} /m ² annum	42.35
Building primary energy rate (BPER), kWh _{PE} /m ² annum	38.12
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-Limit}	U _{a-Calc}	U _{i-Calc}	First surface with maximum value
Walls*	0.26	0.17	0.17	00000043:Surf[19]
Floors	0.18	0.11	0.11	00000043:Surf[39]
Pitched roofs	0.16	0.11	0.11	00000022:Surf[1]
Flat roofs	0.18	0.11	0.11	00000043:Surf[3]
Windows** and roof windows	1.6	1.4	1.4	00000043:Surf[9]
Rooflights***	2.2	1.4	1.4	00000043:Surf[0]
Personnel doors^	1.6	1.4	1.4	0000002A: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-Limit} = Limiting area-weighted average U-values [W/(m²K)]U_{i-Calc} = Calculated maximum individual element U-values [W/(m²K)]U_{a-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- HVAC01a - UFH, MVHR Option 2

	Heating efficiency	Cooling efficiency	Radiant efficiency	SFP [W/(l/s)]	HR efficiency
This system	3	-	0.5	-	0.75
Standard value	2.5*	N/A	N/A	N/A	N/A
Automatic monitoring & targeting with alarms for out-of-range values for this HVAC system					NO
* Standard shown is for all types >12 kW output, except absorption and gas engine heat pumps.					

2- HVAC02b - rads, Kitchen EF Option 2

	Heating efficiency	Cooling efficiency	Radiant efficiency	SFP [W/(l/s)]	HR efficiency
This system	1	-	0.2	-	-
Standard value	N/A	N/A	N/A	N/A	N/A
Automatic monitoring & targeting with alarms for out-of-range values for this HVAC system					NO

3- HVAC02c - rads, natural Option 2

	Heating efficiency	Cooling efficiency	Radiant efficiency	SFP [W/(l/s)]	HR efficiency
This system	1	-	0.2	-	-
Standard value	N/A	N/A	N/A	N/A	N/A
Automatic monitoring & targeting with alarms for out-of-range values for this HVAC system					NO

4- HVAC02a - rads, EF Option 2

	Heating efficiency	Cooling efficiency	Radiant efficiency	SFP [W/(l/s)]	HR efficiency
This system	1	-	0.2	-	-
Standard value	N/A	N/A	N/A	N/A	N/A
Automatic monitoring & targeting with alarms for out-of-range values for this HVAC system					NO

"No HWS in project, or hot water is provided by HVAC system"

Zone-level mechanical ventilation, exhaust, and terminal units

ID	System type in the Approved Documents
A	Local supply or extract ventilation units
B	Zonal supply system where the fan is remote from the zone
C	Zonal extract system where the fan is remote from the zone
D	Zonal balanced supply and extract ventilation system
E	Local balanced supply and extract ventilation units
F	Other local ventilation units
G	Fan assisted terminal variable air volume units
H	Fan coil units
I	Kitchen extract with the fan remote from the zone and a grease filter
NB: Limiting SFP may be increased by the amounts specified in the Approved Documents if the installation includes particular components.	

Zone name	SFP [W/(l/s)]										HR efficiency	
ID of system type	A	B	C	D	E	F	G	H	I		Zone	Standard
Standard value	0.3	1.1	0.5	2.3	2	0.5	0.5	0.4	1			
00.16 Amenity Space	-	-	-	1.8	-	-	-	-	-		-	N/A

Zone name	SFP [W/(l/s)]									HR efficiency	
ID of system type	A	B	C	D	E	F	G	H	I		
Standard value	0.3	1.1	0.5	2.3	2	0.5	0.5	0.4	1	Zone	Standard
00.24 Servery	-	-	-	-	-	-	-	-	0.6	-	N/A
00.25 Kitchen	-	-	-	-	-	-	-	-	0.6	-	N/A
00.30 Utility Room	-	-	0.5	-	-	-	-	-	-	-	N/A
00.31 Shower	-	-	0.5	-	-	-	-	-	-	-	N/A
00.20 Hall	-	-	-	1.8	-	-	-	-	-	-	N/A

General lighting and display lighting		General luminaire	Display light source	
Zone name		Efficacy [lm/W]	Efficacy [lm/W]	Power density [W/m²]
Standard value	95	80	0.3	
00.16 Amenity Space	100	-	-	
00.23 Store	100	-	-	
00.24 Servery	100	-	-	
00.25 Kitchen	100	-	-	
00.26 Food Store	100	-	-	
00.27 Store	100	-	-	
00.28 Circulation	100	-	-	
00.29 General Office	100	-	-	
00.30 Utility Room	100	-	-	
00.31 Shower	100	-	-	
00.32 Private Office	100	-	-	
00.33 Store	100	-	-	
00.36 Plant Room	100	-	-	
00.21 Store	100	-	-	
00.22 Store	100	-	-	
00.20 Hall	100	-	-	

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?
00.16 Amenity Space	YES (+154%)	NO
00.29 General Office	NO (-53.5%)	NO
00.32 Private Office	NO (-66.3%)	NO
00.20 Hall	NO (-45.8%)	NO

Regulation 25A: Consideration of high efficiency alternative energy systems

Were alternative energy systems considered and analysed as part of the design process?	YES
Is evidence of such assessment available as a separate submission?	YES
Are any such measures included in the proposed design?	YES

Technical Data Sheet (Actual vs. Notional Building)

Building Global Parameters

	Actual	Notional
Floor area [m ²]	357.2	357.2
External area [m ²]	1109.7	1109.7
Weather	LEE	LEE
Infiltration [m ³ /hm ² @ 50Pa]	5	3
Average conductance [W/K]	275.04	281.51
Average U-value [W/m ² K]	0.25	0.25
Alpha value* [%]	24	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

100 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/m²]

	Actual	Notional
Heating	17.52	12.42
Cooling	0	0
Auxiliary	10.55	4.68
Lighting	10.52	7.63
Hot water	14.33	12.94
Equipment*	22.93	22.93
TOTAL **	52.93	37.67

* 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	28.97	9.46
Wind turbines	0	0
CHP generators	0	0
Solar thermal systems	0	0
<i>Displaced electricity</i>	<i>28.97</i>	<i>9.46</i>

Energy & CO₂ Emissions Summary

	Actual	Notional
Heating + cooling demand [MJ/m ²]	111.6	88
Primary energy [kWh _{PE} /m ²]	38.12	42.35
Total emissions [kg/m ²]	3.8	4.07

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 SSEFF	Cool SSEER	Heat gen SEFF	Cool gen SEER	
[ST] Central heating using water: floor heating, [HS] ASHP, [HFT] Electricity, [CFT] Electricity										
Actual	120	0	12.5	0	11.7	2.68	0	3	0	
Notional	78	0	7.8	0	2.7	2.78	0	----	----	
[ST] Other local room heater - unfanned, [HS] Direct or storage electric heater, [HFT] Electricity, [CFT] Electricity										
Actual	264	0	73.3	0	19.8	1	0	1	0	
Notional	277.3	0	54.6	0	22.5	1.41	0	----	----	
[ST] Other local room heater - unfanned, [HS] Direct or storage electric heater, [HFT] Electricity, [CFT] Electricity										
Actual	214.7	0	59.7	0	0	1	0	1	0	
Notional	236.8	0	46.6	0	0	1.41	0	----	----	
[ST] Other local room heater - unfanned, [HS] Direct or storage electric heater, [HFT] Electricity, [CFT] Electricity										
Actual	6.9	0	2.4	0	21.2	0.8	0	1	0	
Notional	10.4	0	2	0	20.1	1.41	0	----	----	
[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