

## Project name

Care Home Conversion - Baseline

As designed

Date: Tue Apr 29 11:30:15 2025

## Administrative information

## Building Details

**Address:** Care Home Conversion, 7 Belvedere Road,  
Redland, Bristol, BS6 7JG

## Certifier details

**Name:** Benjamin Leech

**Telephone number:** 01242 506150

**Address:** Ground Floor Parker Court Knapp Lane,  
Cheltenham, GL50 3QJ

## Certification tool

**Calculation engine:** SBEM

**Calculation engine version:** v6.1.e.2

**Interface to calculation engine:** DesignBuilder SBEM

**Interface to calculation engine version:** v7.2.0

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

**Foundation area [m<sup>2</sup>]:** 124.3

The CO<sub>2</sub> emission and primary energy rates of the building must not exceed the targets

Target CO <sub>2</sub> emission rate (TER), kgCO <sub>2</sub> /m <sup>2</sup> annum	9.47
Building CO <sub>2</sub> emission rate (BER), kgCO <sub>2</sub> /m <sup>2</sup> annum	7.33
Target primary energy rate (TPER), kWh <sub>PE</sub> /m <sup>2</sup> annum	101.29
Building primary energy rate (BPER), kWh <sub>PE</sub> /m <sup>2</sup> annum	78.66
Do the building's emission and primary energy rates exceed the targets?	BER =< TER   BPER =< TPER

## The performance of the building fabric and fixed building services should achieve reasonable overall standards of energy efficiency

Fabric element	U <sub>a</sub> -Limit	U <sub>a</sub> -Calc	U <sub>i</sub> -Calc	First surface with maximum value
Walls*	0.26	0.3	0.3	1. Lower Ground Floor - Lounge_W_20
Floors	0.18	0.24	0.25	1. Lower Ground Floor - Lounge_S_3
Pitched roofs	0.16	0.18	0.18	4. Second Floor - Bedroom 12_R_19
Flat roofs	0.18	0.18	0.18	2. Ground Floor - Bedroom 1 En-Suite_R_13
Windows** and roof windows	1.6	1.6	1.6	1. Lower Ground Floor - Lounge_G_22
Rooflights***	2.2	-	-	No external rooflights
Personnel doors <sup>^</sup>	1.6	3	3	1. Lower Ground Floor - Dining Area_D_21
Vehicle access & similar large doors	1.3	-	-	No external vehicle access doors
High usage entrance doors	3	-	-	No external high usage entrance doors

U<sub>a</sub>-Limit = Limiting area-weighted average U-values [W/(m<sup>2</sup>K)]

U<sub>i</sub>-Calc = Calculated maximum individual element U-values [W/(m<sup>2</sup>K)]

U<sub>a</sub>-Calc = Calculated area-weighted average U-values [W/(m<sup>2</sup>K)]

\* Automatic U-value check by the tool does not apply to curtain walls whose limiting standard is similar to that for windows.

\*\* Display windows and similar glazing are excluded from the U-value check. \*\*\* Values for rooflights refer to the horizontal position.

<sup>^</sup> For fire doors, limiting U-value is 1.8 W/m<sup>2</sup>K

NB: Neither roof ventilators (inc. smoke vents) nor swimming pool basins are modelled or checked against the limiting standards by the tool.

Air permeability	Limiting standard	This building
m <sup>3</sup> /(h.m <sup>2</sup> ) at 50 Pa	8	8

## 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- ASHP

	Heating efficiency	Cooling efficiency	Radiant efficiency	SFP [W/(l/s)]	HR efficiency
<b>This system</b>	4.81	-	-	-	-
<b>Standard value</b>	2.5*	N/A	N/A	N/A	N/A
<b>Automatic monitoring &amp; targeting with alarms for out-of-range values for this HVAC system</b>					NO
* Standard shown is for all types >12 kW output, except absorption and gas engine heat pumps.					

1- From ASHP

	Water heating efficiency	Storage loss factor [kWh/litre per day]
<b>This building</b>	Hot water provided by HVAC system	0.001
<b>Standard value</b>	N/A	N/A

### Zone-level mechanical ventilation, exhaust, and terminal units

ID	System type in the Approved Documents
A	Local supply or extract ventilation units
B	Zonal supply system where the fan is remote from the zone
C	Zonal extract system where the fan is remote from the zone
D	Zonal balanced supply and extract ventilation system
E	Local balanced supply and extract ventilation units
F	Other local ventilation units
G	Fan assisted terminal variable air volume units
H	Fan coil units
I	Kitchen extract with the fan remote from the zone and a grease filter

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

Zone name	SFP [W/(l/s)]										HR efficiency	
	ID of system type	A	B	C	D	E	F	G	H	I	Zone	Standard
	<b>Standard value</b>	0.3	1.1	0.5	2.3	2	0.5	0.5	0.4	1		
1. Lower Ground Floor - Laundry	0.3	-	-	-	-	-	-	-	-	-	-	N/A
1. Lower Ground Floor - W.C.	0.3	-	-	-	-	-	-	-	-	-	-	N/A
1. Lower Ground Floor - Kitchenette	0.3	-	-	-	-	-	-	-	-	-	-	N/A
2. Ground Floor - Bedroom 1 En-Suite	0.3	-	-	-	-	-	-	-	-	-	-	N/A
2. Ground Floor - Bedroom 2 En-Suite	0.3	-	-	-	-	-	-	-	-	-	-	N/A
2. Ground Floor - Bedroom 4 En-Suite	0.3	-	-	-	-	-	-	-	-	-	-	N/A
2. Ground Floor - Bedroom 3 En-Suite	0.3	-	-	-	-	-	-	-	-	-	-	N/A
3. First Floor - Bedroom 8 En-Suite	0.3	-	-	-	-	-	-	-	-	-	-	N/A
3. First Floor - Bedroom 7 En-Suite	0.3	-	-	-	-	-	-	-	-	-	-	N/A
3. First Floor - Bedroom 5 En-Suite	0.3	-	-	-	-	-	-	-	-	-	-	N/A
3. First Floor - Bedroom 6 En-Suite	0.3	-	-	-	-	-	-	-	-	-	-	N/A
4. Second Floor - Bedroom 9 En-Suite	0.3	-	-	-	-	-	-	-	-	-	-	N/A
4. Second Floor - Bedroom 10 En-Suite	0.3	-	-	-	-	-	-	-	-	-	-	N/A
4. Second Floor - Bedroom 12 En-Suite	0.3	-	-	-	-	-	-	-	-	-	-	N/A

Zone name	SFP [W/(l/s)]									HR efficiency	
	A	B	C	D	E	F	G	H	I	Zone	Standard
<b>ID of system type</b>	<b>0.3</b>	<b>1.1</b>	<b>0.5</b>	<b>2.3</b>	<b>2</b>	<b>0.5</b>	<b>0.5</b>	<b>0.4</b>	<b>1</b>		
<b>Standard value</b>	0.3	-	-	-	-	-	-	-	-	-	N/A
4. Second Floor - Bedroom 11 En-Suite	0.3	-	-	-	-	-	-	-	-	-	N/A
4. Second Floor - Day Room	0.3	-	-	-	-	-	-	-	-	-	N/A

Zone name	General lighting and display lighting	General luminaire	Display light source	
		Efficacy [lm/W]	Efficacy [lm/W]	Power density [W/m <sup>2</sup> ]
<b>Standard value</b>	95	80	0.3	
1. Lower Ground Floor - Lounge	95	-	-	
1. Lower Ground Floor - Lobby and Lift	95	-	-	
1. Lower Ground Floor - Laundry	95	-	-	
1. Lower Ground Floor - Hallway	95	-	-	
1. Lower Ground Floor - W.C.	95	-	-	
1. Lower Ground Floor - Dining Area	95	-	-	
1. Lower Ground Floor - Staff Area	95	-	-	
1. Lower Ground Floor - Kitchenette	95	-	-	
2. Ground Floor - Store 1	95	-	-	
2. Ground Floor - Bedroom 1 En-Suite	95	-	-	
2. Ground Floor - Bedroom 1	95	-	-	
2. Ground Floor - Bedroom 2	95	-	-	
2. Ground Floor - Store 2	95	-	-	
2. Ground Floor - Bedroom 2 En-Suite	95	-	-	
2. Ground Floor - Store 4	95	-	-	
2. Ground Floor - Lobby and Lift	95	-	-	
2. Ground Floor - Bedroom 4	95	-	-	
2. Ground Floor - Bedroom 4 En-Suite	95	-	-	
2. Ground Floor - Day Room	95	-	-	
2. Ground Floor - Central Corridor	95	-	-	
2. Ground Floor - Store 3	95	-	-	
2. Ground Floor - Bedroom 3	95	-	-	
2. Ground Floor - Bedroom 3 En-Suite	95	-	-	
3. First Floor - Lobby and Lift	95	-	-	
3. First Floor - Bedroom 8	95	-	-	
3. First Floor - Bedroom 8 En-Suite	95	-	-	
3. First Floor - Central Corridor	95	-	-	
3. First Floor - Bedroom 5	95	-	-	
3. First Floor - Bedroom 7	95	-	-	
3. First Floor - Store	95	-	-	
3. First Floor - Bedroom 7 En-Suite	95	-	-	
3. First Floor - Day Room	95	-	-	
3. First Floor - Bedroom 5 En-Suite	95	-	-	
3. First Floor - Bedroom 6 En-Suite	95	-	-	
3. First Floor - Bedroom 6	95	-	-	
4. Second Floor - Bedroom 9 En-Suite	95	-	-	
4. Second Floor - Bedroom 9	95	-	-	

General lighting and display lighting		General luminaire	Display light source	
Zone name		Efficacy [lm/W]	Efficacy [lm/W]	Power density [W/m <sup>2</sup> ]
	<b>Standard value</b>	95	80	0.3
4. Second Floor - Bedroom 10		95	-	-
4. Second Floor - Bedroom 10 En-Suite		95	-	-
4. Second Floor - Lobby and Lift		95	-	-
4. Second Floor - Bedroom 12		95	-	-
4. Second Floor - Bedroom 12 En-Suite		95	-	-
4. Second Floor - Bedroom 11 En-Suite		95	-	-
4. Second Floor - Day Room		95	-	-
4. Second Floor - Bedroom 11		95	-	-
4. Second Floor - Store		95	-	-
4. Second Floor - Central Corridor		95	-	-

**The spaces in the building should have appropriate passive control measures to limit solar gains in summer**

Zone	Solar gain limit exceeded? (%)	Internal blinds used?
1. Lower Ground Floor - Lounge	NO (-12.9%)	NO
1. Lower Ground Floor - Laundry	NO (-65.9%)	NO
1. Lower Ground Floor - Dining Area	NO (-65.1%)	NO
1. Lower Ground Floor - Staff Area	NO (-93.1%)	NO
2. Ground Floor - Bedroom 1	NO (-59.2%)	NO
2. Ground Floor - Bedroom 2	NO (-13.3%)	NO
2. Ground Floor - Bedroom 4	NO (-18.6%)	NO
2. Ground Floor - Day Room	NO (-94.6%)	NO
2. Ground Floor - Bedroom 3	NO (-29.8%)	NO
3. First Floor - Bedroom 8	NO (-55.3%)	NO
3. First Floor - Bedroom 5	NO (-29%)	NO
3. First Floor - Bedroom 7	NO (-57.1%)	NO
3. First Floor - Day Room	NO (-45.7%)	NO
3. First Floor - Bedroom 6	NO (-23%)	NO
4. Second Floor - Bedroom 9	NO (-81.7%)	NO
4. Second Floor - Bedroom 10	NO (-87.2%)	NO
4. Second Floor - Bedroom 12	NO (-91%)	NO
4. Second Floor - Bedroom 11	NO (-92.4%)	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 [m <sup>2</sup> ]	497.2	497.2
External area [m <sup>2</sup> ]	694.4	694.4
Weather	CAR	CAR
Infiltration [m <sup>3</sup> /hm <sup>2</sup> @ 50Pa]	8	3
Average conductance [W/K]	298.18	297.97
Average U-value [W/m <sup>2</sup> K]	0.43	0.43
Alpha value* [%]	41.3	40.84

\* 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
<b>2</b>	<b>Offices and Workshop Businesses</b>
	General Industrial and Special Industrial Groups
	Storage or Distribution
	Hotels
<b>98</b>	<b>Residential Institutions: Hospitals and Care Homes</b>
	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<sup>2</sup>]

	Actual	Notional
Heating	12.4	19.58
Cooling	0	0
Auxiliary	7.25	8.31
Lighting	16.07	11.89
Hot water	15.83	28.18
Equipment*	53.5	53.5
<b>TOTAL**</b>	<b>51.56</b>	<b>67.97</b>

\* Energy used by equipment does not count towards the total for consumption or calculating emissions.

\*\* Total is net of any electrical energy displaced by CHP generators, if applicable.

## Energy Production by Technology [kWh/m<sup>2</sup>]

	Actual	Notional
Photovoltaic systems	0	0
Wind turbines	0	0
CHP generators	0	0
Solar thermal systems	0	0
<i>Displaced electricity</i>	<i>0</i>	<i>0</i>

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

	Actual	Notional
Heating + cooling demand [MJ/m <sup>2</sup> ]	414.6	424.5
Primary energy [kWh <sub>PE</sub> /m <sup>2</sup> ]	78.66	101.29
Total emissions [kg/m <sup>2</sup> ]	7.33	9.47

## 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: radiators, [HS] ASHP, [HFT] Electricity, [CFT] Electricity									
Actual	191.6	223	12.4	0	7.2	4.29	0	4.81	0
Notional	186.1	238.4	19.6	0	6.3	2.64	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