

ENERGY STATEMENT



**Baldock Industrial Estate,
London Road
Baldock,
SG7 6NG**

June 2025

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Appendix 1 – Sample BRUKL Report

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1.0 EXECUTIVE SUMMARY

1.1 UK Building Compliance have been appointed to undertake an Energy Statement on a proposed commercial development at Baldock Industrial Estate, London Road, Baldock, SG7 6NG.

1.2 The development comprises of multiple warehouse facilities with accompanying office units.

1.3 This document has been produced to satisfy:

- North Hertfordshire Local Plan 2011-2031
- North Hertfordshire Council Sustainability Supplementary Planning Document
- Part L of the Building Regulations England & Wales 2021

1.4 This document details how the requirements are met via:

- Passive Design Measures
- Low U-Values
- Air Source Heat Pump

2.0 POLICY FRAMEWORK

2.1 The following section outlines the relevant policy frameworks at national, regional and local level.

2.2 NATIONAL POLICIES

2.3 In June 2022, Part L2A of the Building Regulations England & Wales was updated.

2.4 In addition to tightening of the previous 'Building Emission Rating' criteria, a new compliance metric 'Primary Energy Demand' was also introduced.

2.5 A combination of lower U-Values and the introduction of renewable technology can summarise the main changes between the previous and new Part L standards.

2.6 The new Part L standards ensure a carbon reduction of approximately 35%, compared to the previous version.

2.7 REGIONAL POLICIES

2.8 North Hertfordshire's Local Plan and SPD documents state a required focus on optimising passive design, energy efficiency & harnessing low carbon energy.

2.9 Major non residential development is required to achieve Part L Building Regulation compliance as a minimum to achieve the SPD Bronze level, as well as undertaking an analysis of renewable feasibility.

2.10 Should the development wish to go further, a 35% carbon reduction is required to achieve Silver level & 50% required for Gold level. There is also a requirement for 20% of the total energy demand to be provided by renewable technology to achieve Silver, or 40% to achieve Gold.

2.11 The following sections will outline the predicted annual energy demand and associated carbon emissions of the development in order to comply with the Bronze level above.

2.12 This will be achieved by following the widely regarded energy hierarchy, whereby demand is reduced first and foremost before low carbon energy sources are introduced.

3.0 BASELINE CALCULATIONS

3.1 SBEM Calculations have been carried out on a large sample using the Design Builder software version 7.3.1 to gain the regulated emissions for the site.

Regulated Emissions are the CO2 emissions covered under Part L of the Building Regulations and comprise of:

- a) Space Heating and Cooling
- b) Hot Water
- c) Lighting
- d) Pumps and Fans
- e) Equipment
- f) Auxiliary Energy

A licensed and Level 4 NDEA accredited SBEM Assessor has carried out the calculations.

3.2 Development carbon emissions and energy demand at this stage of the hierarchy are as follows:

	Regulated CO2 Emissions – kg of CO2 per annum	Regulated Energy – kWh/m ² per annum	% Improvement on baseline
Baseline: Part L 2021 of the Building Regulations Target Emission Rating (TER)	7.75		
Baseline: Part L 2021 of the Building Regulations Target Primary Energy Demand (TPER)		82.69	
Part L 2021 of the Building Regulations Building Primary Energy Demand (BER)			
<i>Part L 2021 of the Building Regulations Building Emission Rate (BPER)</i>			

4.0 SBEM CALCULATIONS

4.1 High energy efficiency standards are demonstrated in the table below. Construction Details have been selected to ensure that all fabric U-Values exceed the requirements of Part L of the Building Regulations (2021) and all Heating, Hot Water and Ventilation elements are in compliance with the Domestic Building Services Compliance Guide.

The proposed construction details for the unit are as follows:

Elements	U Value/Specification	Development Notes
Ground Floor	0.12 W/m ² /K	Exceeds the minimum of 0.18 W/m ² /K standard
External Walls	0.25 W/m ² /K	Exceeds the minimum of 0.26 W/m ² /K standard
Roof	0.16 W/m ² /K	
Windows	1.40 W/m ² /K	Exceeds the minimum 1.6 W/m ² /K standard
Personnel Doors	1.30 W/m ² /K	Exceeds the minimum 1.6 W/m ² /K standard
Vehicle Access Doors	1.30 W/m ² /K	
Air Permeability	8 m ³ (h.m ²)	
Ventilation	Natural Ventilation	Extract fans in WCs/Kitchens
Space Heating	Air Source Heat Pump	SCOP 4.35 SEER 6
Water Heating	Instantaneous Electric	
Warehouse/Storage	Unheated	
Lighting	100% LED	120 lm/W

A full sample SBEM BRUKL document can be found in Appendix 1 to verify the above inputs.

4.2 Following SBEM Calculations, CO2 emissions & energy demand are as follows:

	Regulated CO2 Emissions – kg of CO2 per annum	Regulated Energy Demand – kWh/m ² per annum	% Improvement on baseline
Baseline: Part L 2021 of the Building Regulations Target Emission Rating (TER)	7.75		
Baseline: Part L 2021 of the Building Regulations Target Primary Energy Demand (TPER)		82.69	
Part L 2021 of the Building Regulations Building Primary Energy Demand (BER)	5.49		29.16%
<i>Part L 2021 of the Building Regulations Building Emission Rate (BPER)</i>		58.29	29.51%

4.3 The development achieves an 29.16% reduction in carbon emissions, on top of baseline Part L standards.

4.4 The development also utilises 15.6 kWh/m² energy from air source heat pumps to provide all heating demand. This equates to 41% of the total regulated energy demand at 37.99 kWh/m². These figures can be found on page 4 of the BRUKL document.

4.5 It should be noted that these figures are based on a large sample of the entire development as one. These figures are liable to change at detailed design stage once the use of each zone becomes apparent, the final plans are produced and each unit is treated separately for compliance purposes.

4.6 Each unit will require its own separate SBEM calculation and BRUKL report for building control sign off. The BRUKL report attached in the appendix to this statement should be used for planning purposes only and not to inform the detailed design.

5.0 RENEWABLE ANALYSIS

5.1 The potential renewable energy applicable to this development and its feasibility is investigated below:

Renewable	Advantages	Disadvantages	Feasibility
Photovoltaic Panels	Can have significant impact on carbon by offsetting electricity which has a high carbon footprint. Low maintenance. No noise issues associated with PV. No additional land use from the installation of PV panels. Reduces pressure on the local National Grid supply.	High capital investment required. Needs unobstructed space on roof.	The development incorporates a large pitched roof which is well suited to PV. There is significant roof space on an optimum south-east facing elevation, despite the presence of some rooflights.
Solar Thermal Collectors	No additional land use from the installation of solar thermal collectors. Low maintenance and easy to manage. Low capital cost. No noise issues associated with Solar thermal collectors.	Limited CO₂ offset No Grants or Tariffs for new build installations.	Solar thermal collectors are feasible for the development. However, hot water demand as a percentage of total energy demand is relatively small and constitutes less than 5% of the overall regulated energy demand. This significantly reduces the impact of this technology.
Biomass Heating	Potential to reduce large component of the total CO₂. Biomass is a low carbon heating fuel.	Regular maintenance will be required. Reliability of the large amounts of fuel that would be required may become a problem. A fuel store will be required which may take additional land from the proposed development. Produces NO_x emissions which are becoming an increasingly topical and controversial subject.	Biomass is not considered feasible for such a development due to the large amount of fuel required & local NO_x emissions. The total heating demand for a building of this size is too great to make this option feasible.

Ground Source Heat Pumps	Low maintenance and easy to manage Optimum efficiency with under- floor heating systems. As heat pumps would replace standard heating systems, some of the cost may offset through money saved on a traditional boiler.	The heat pump has a noise level around 45- 60dB so some attenuation may be required, and it should be sensibly located. Relatively high capital cost. Requires electricity to run the pump, therefore limited carbon savings in most cases. For communal systems plant room required which may take additional land from the proposed development/ surroundings. High payback.	Limited Space on site and large communal infrastructure required. Not suitable for an urban industrial estate.
Air Source Heat Pumps	ASHP systems are generally cheaper than ground source as there is no requirement for long lengths of buried piping. Low maintenance and easy to manage. Optimum efficiency with under- floor heating systems. As heat pumps would replace standard heating systems, some of the cost may offset through money saved on a traditional boiler.	The heat pump has a noise level around 50- 60dB so some attenuation may be required, and it should be sensibly located. The potential noise from the external unit may mean there is local opposition to their installation. Requires electricity to run the pump, therefore limited carbon savings in most cases. For communal systems, plant room is required which may take additional land from the proposed development/surroundings Potential noise issues.	This option is suitable and is the favoured approach to heating on Part L 2021, as well as per the Local Authority planning documents.

5.2 The most feasible renewable options have been selected in order to achieve compliance in the most viable way.

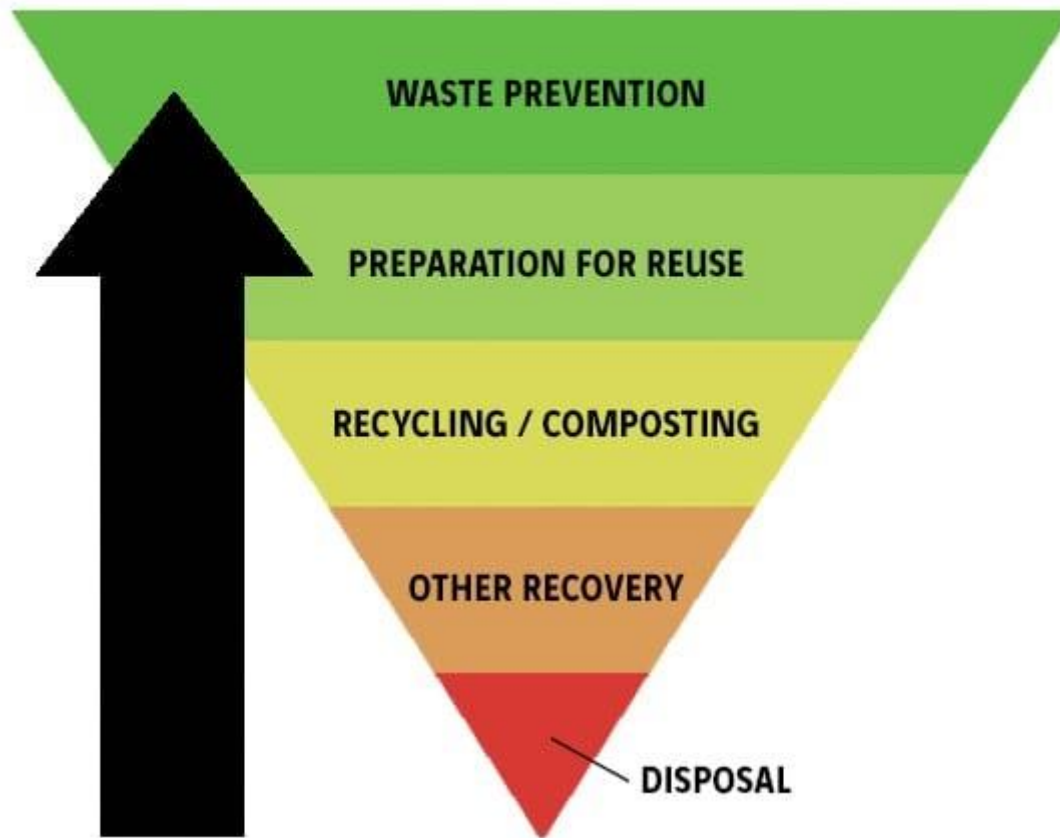
5.3 Air source heat pumps are deemed the most suitable technology for the nature of this building.

5.4 This ensures that low carbon heating is provided, in line with the Local Authority's policy guidance.

6.0 SUSTAINABLE CONSTRUCTION

6.1 The Developer will monitor and record waste produce from site activities to ensure that the maximum possible will be diverted from landfill and reused in line with the waste hierarchy (below). This may be via a SWMP or via a licensed waste contractor.

WASTE HIERARCHY



6.2 All timber will be purchased in line with the Government's Policy for UK Timber Procurement.

6.3 As per local authority requirements - a minimum of 10% of the total value of materials to be used will be derived from recycled content in products and materials selected.

6.4 Should the developer and client wish to go further than the mandatory requirements, the following voluntary BREEAM options could be considered when sourcing materials;

- Responsible sourcing certifications e.g. EMS (EMAS, ISO14001).
- Chain of custody and/or BES6001 for key and supply chain processes.
- Legally sourced timber: Chain of custody and certificate (FSC, SFI, PEFC, MTCC, SGS, TFT, Verified etc)

7.0 CONCLUSION

7.1 This document is written in accordance with the guidelines and requirements of:

- i) North Hertfordshire Local Plan 2011-2031
- ii) North Hertfordshire Council Sustainability Supplementary Planning Document 2024
- iii) Part L of the Building Regulations England & Wales 2021

7.2 The development achieves a carbon reduction of 29%, on top of baseline Part L standards. This comfortably exceeds the minimum Bronze council requirements.

7.3 In addition to the passive measures and high energy efficiency standards, Air Source Heat Pumps will be incorporated in order to provide 41% of the total energy demand. This exceeds the minimum Bronze requirement and achieves the Gold level.

7.4 The waste hierarchy will be followed on site in order to minimise whole-life carbon emissions of the development, as well as to ensure wider sustainability.

Appendix 1

BRUKL Report

Project name

Baldock Industrial Estate**As designed****Date:** Fri May 30 08:10:27 2025

Administrative information

Building Details

Address: Proposed Units, London Road, Baldock, SG7 6NG

Certifier details

Name: UK Building Compliance**Telephone number:** 01455 634855**Address:** 1a Clarendon Road, Hinckley, LE10 0PJ

Certification tool

Calculation engine: SBEM**Calculation engine version:** v6.1.e.2**Interface to calculation engine:** DesignBuilder SBEM**Interface to calculation engine version:** v7.3.1**BRUKL compliance module version:** v6.1.e.1**Foundation area [m²]:** 865.84The 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	7.75
Building CO ₂ emission rate (BER), kgCO ₂ /m ² annum	5.49
Target primary energy rate (TPER), kWh _{PE} /m ² annum	82.69
Building primary energy rate (BPER), kWh _{PE} /m ² annum	58.29
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	0.25	0.25	Block 1 - Office 1_P_5
Floors	0.18	0.12	0.12	Block 1 - Office 1_S_3
Pitched roofs	0.16	0.16	0.16	Block 1 - Office 1_R_4
Flat roofs	0.18	-	-	No heat loss flat roofs
Windows** and roof windows	1.6	1.4	1.4	Block 1 - Office 1_G_12
Rooflights***	2.2	-	-	No external rooflights
Personnel doors^	1.6	1.3	1.3	Block 1 - Office 1_D_11
Vehicle access & similar large doors	1.3	1.3	1.3	Block 1 - Office 1_D_10
High usage entrance doors	3	-	-	No external high usage entrance doors

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	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
This system	4.35	6	-	-	-
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.					

1- Project DHW

	Water heating efficiency	Storage loss factor [kWh/litre per day]
This building	1	-
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
Block 1 - Office 1		120	-	-
Block 1 - Office		120	-	-
Block 1 - Toilets		120	-	-
Block 1 - Stairs		120	-	-
Block 1 - WCs 1		120	-	-
Block 1 - Wc 1		120	-	-
Block 1 - Wc 2		120	-	-
Block 1 - WC 3		120	-	-
Block 1 - WCS 2		120	-	-
Block 1 - WC		120	-	-
Block 1 - Kitchen 1		120	-	-
Block 1 - Kitchen		120	-	-
Block 1 - WCs		120	-	-

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?
Block 1 - Office 1	NO (-97.3%)	NO
Block 1 - Office	N/A	N/A
Block 1 - Toilets	N/A	N/A
Block 1 - Stairs	N/A	N/A
Block 1 - WCs 1	NO (-58.2%)	NO
Block 1 - Wc 1	N/A	N/A
Block 1 - Wc 2	N/A	N/A
Block 1 - WC 3	N/A	N/A

Zone	Solar gain limit exceeded? (%)	Internal blinds used?
Block 1 - WCS 2	N/A	N/A
Block 1 - WC	N/A	N/A
Block 1 - Kitchen 1	N/A	N/A
Block 1 - Kitchen	N/A	N/A
Block 1 - WCs	N/A	N/A

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]	865.8	865.8
External area [m ²]	3143	3143
Weather	LON	LON
Infiltration [m ³ /hm ² @ 50Pa]	8	5
Average conductance [W/K]	736.94	986.98
Average U-value [W/m ² K]	0.23	0.31
Alpha value* [%]	16.55	85.6

* 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

100 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/m²]

	Actual	Notional
Heating	15.6	30.98
Cooling	1.59	8.25
Auxiliary	0	0
Lighting	14.97	10.36
Hot water	5.83	5.83
Equipment*	45.2	45.2
TOTAL **	37.99	55.41

* 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
<i>Displaced electricity</i>	<i>0</i>	<i>0</i>

Energy & CO₂ Emissions Summary

	Actual	Notional
Heating + cooling demand [MJ/m ²]	251.99	374.54
Primary energy [kWh _{PE} /m ²]	58.29	82.69
Total emissions [kg/m ²]	5.49	7.75

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	227.6	24.4	15.6	1.6	0	4.05	4.26	4.35	6
	Notional	294.4	80.1	31	8.2	0	2.64	2.7	----	----

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

Appendix 2

Energy Output Report

SBEM Main Calculation Output Document

Fri May 30 08:10:26 2025

v6.1.e.2

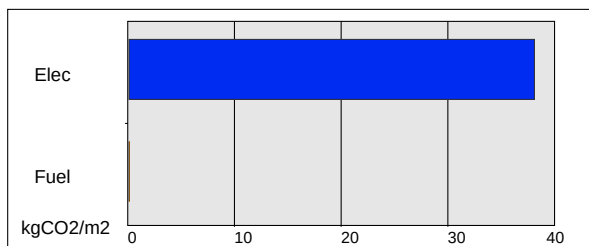
Building name

Baldock Industrial Estate

Building type: Storage or Distribution

SBEM is an energy calculation tool for the purpose of assessing and demonstrating compliance with Building Regulations (Part L for England and Wales, Section 6 for Scotland, Part F for Northern Ireland, and Building Bye-laws Jersey Part 11) and to produce Energy Performance Certificates and Building Energy Ratings. Although the data produced by the tool may be of use in the design process, **SBEM is not intended as a building design tool.**

Building Energy Performance and CO2 emissions

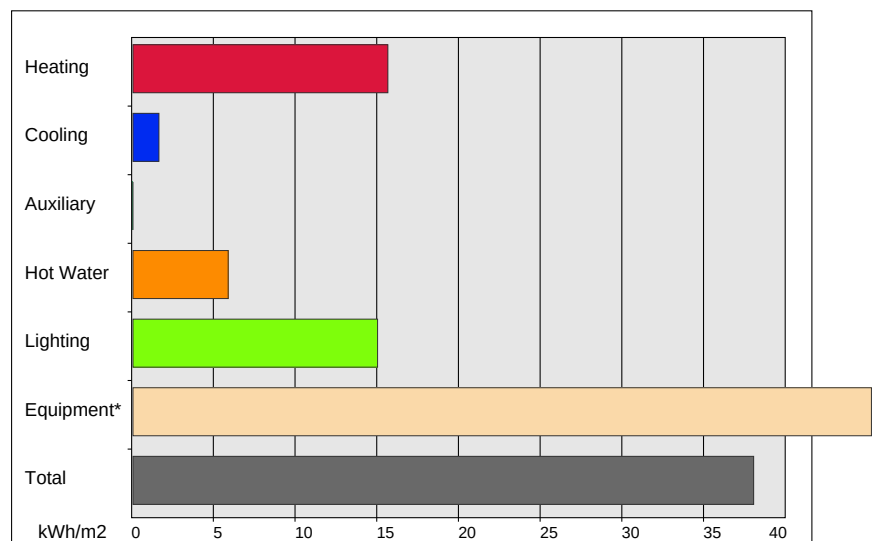
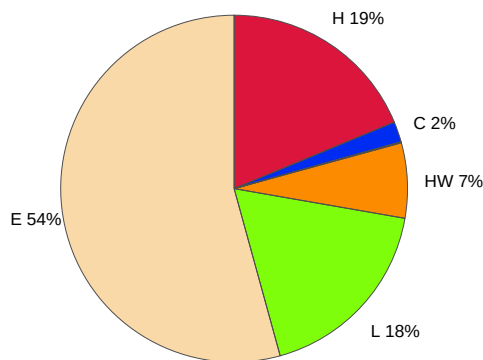


0 kgCO2/m2 displaced by the use of renewable sources.

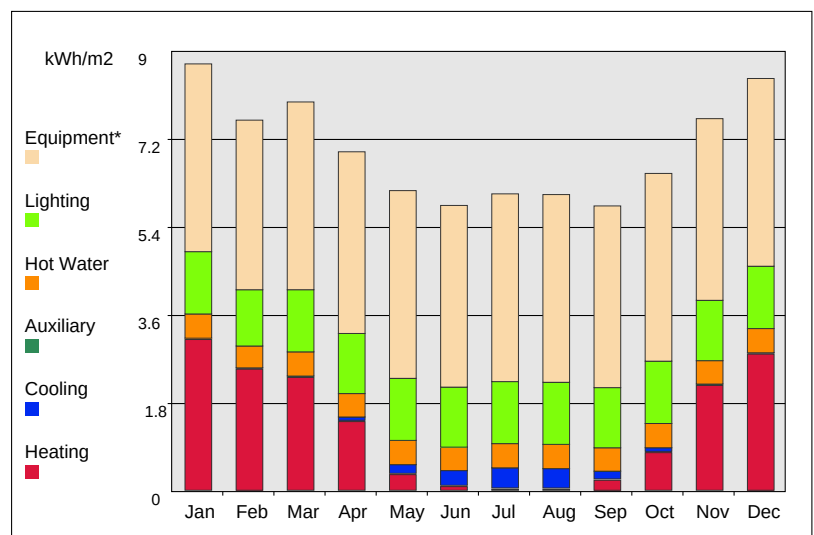
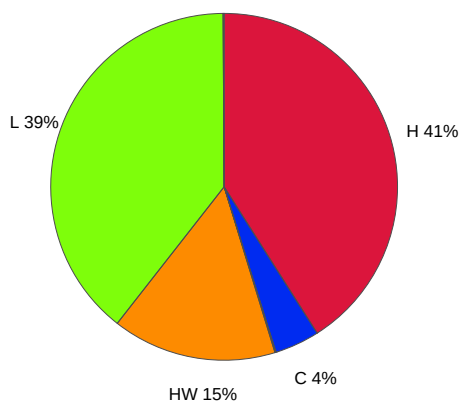
Building area is 865.84 m2

Annual Energy Consumption

(Pie chart including Equipment end-use)

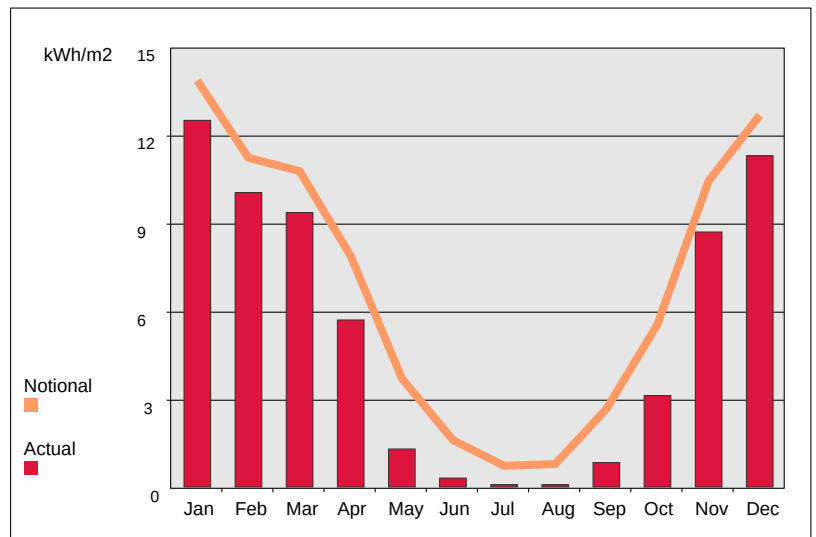
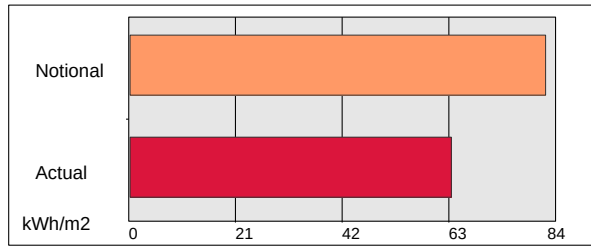


(Pie chart excluding Equipment end-use)



(*) Although energy consumption by equipment is shown in the graphs for information, this end-use has not been included in the total results of the building or the calculation of the ratings.

Annual Heating Demand



Annual Cooling Demand

