ELMSTEAD ENERGY ASSESSMENTS AND BUILDING SERVICES

St Mary's Church Extension

Primrose Hill

Energy Statement

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1.0 Executive Summary

EEABS (Elmstead Energy Assessments & Building Services) were instructed to produce an Energy Statement for the proposed extension to St Mary's Church Primrose Hill.

This energy statement can be used as a supporting document to the planning application to demonstrate that the carbon emissions and overall energy strategy of the proposed development will meet the requirements set out by The London Plan and the latest Part L 2021 Building Regulations.

Relevant Planning Policies

From inspection of the relevant policies for the proposed development we consider that the following targets need to meet in order to comply with the latest 2021 Part L Building Regulations and The London Plan.

- The new extension should try to demonstrate a 35% improvement in total CO_2 emissions over what is set out in Part L of the Building Regulations 2021 through on-site measures.
- To achieve 'Zero Carbon' any remaining emissions should be offset through a cash in lieu contribution set at £95 per tonne of CO2 for a period of 30 years.

(As this development is not greater than 1,000 m2 it is not considered as a major development and therefore the requirements of the London Plan should not strictly apply, however the guidance will still be followed, and every effort will be made to ensure the most energy efficient and carbon minimal design possible)

Assessment Methodology

This assessment has been carried out in accordance with the latest London Plan Energy Assessment Guidance June 2022 and follows the Be Lean, Be Clean, Be Green Energy Hierarchy.

Dynamic Simulation modelling software EDSL TAS has been used to establish the Carbon emission for the development at each stage of the Energy Hierarchy.

The appraisals within this strategy are based on the Building Regulations Part L (2021) calculation methodology and should not be understood as a predictive assessment of likely future energy requirements or otherwise.

Be Lean

The results show that by implementing the Be Lean measures the carbon emissions would be 2.12 kgCO2/m^2, compared to 1.99 kgCO2/m^2 for the Baseline. This means that at this stage the proposed design would not currently satisfy the Part L Building Regulations.

Be Clean

Due to the small size of the extension the possibility of connecting to an Area Wide Heat Network, other secondary heat source, using a combined heat and power system (CHP), or the use of low-NOX boilers have all been deemed technically unfeasible.

Be Green

From brief assessment of the various renewable technologies available we can see that air source heat pumps and Photovoltaic panels would be the most feasible renewable technologies to install for the proposed development.

The heating is assumed to be provided by a Daikin EDLA09D3W1 with a seasonal efficiency of 4.72.

Hot water is assumed to be provided by a Daikin EHVH04SU18EA6V with a seasonal efficiency of 3.26.

At this time, we have not assumed any Photovoltaic solar panels will be installed.

The results show that by implementing the Be Green measures the carbon emissions would be 1.80 kgCO2/m^2, compared to 1.99 kgCO2/m^2 for the Baseline. This means that at this stage the proposed design would satisfy the Part L Building Regulations with an overall improvement of 9.55%.

The extension would also receive an EPC rating of 7 and a Banding of A.

Carbon Offset Payment

The final results show that the proposed development would still be emitting 1.80 Tonnes of CO2 per annum. The off-set payment under the latest London Plan guidance sets a figure of £95 per tonne of CO2 for a period of 30 years.

This equates to a total off-set payment of £5,130 in order for the development to meet the Zero Carbon target. (Although as this is not a major development, the final net zero target should not be a mandatory requirement).

Overheating

The CIBSE TM52 overheating risk assessment showed that the main habitable rooms (Kitchen/Office, Entrance Hall, Counselling, and Multi-Purpose Room) of the extension would pass the overheating criteria.

Conclusion

This energy assessment has shown that the proposed extension to St Mary's Church Primrose Hill, that by following the energy hierarchy, the proposed development would achieve overall carbon savings of 9.55% over the Part L 2021 Baseline.

Although this is below the recommended 35% improvement within the London Plan, this is for major developments only that are greater than 1,000 m2. As the proposed extension is below this it should only need to satisfy the latest Part L Building Regulations, which it comfortably does.

If a net-zero carbon development is required, then a carbon offset payment of £5,130 can be made to offset the extensions remaining emissions.

2.0 Introduction

EEABS (Elmstead Energy Assessments & Building Services) were instructed to produce an Energy Statement for the proposed extension to St Mary's Church Primrose Hill.

This energy statement can be used as a supporting document to the planning application to demonstrate that the carbon emissions and overall energy strategy of the proposed development will meet the requirements set out by The London Plan and the latest Part L 2021 Building Regulations.

2.1 Planning Policy Context

Numerous policies that relate to the energy efficiency and carbon emissions of the development have been considered in preparation of this energy assessment.

2.1.1 National Planning Policy Framework

The National Planning Policy Framework encourages local planning authorities to adopt proactive strategies to mitigate and adapt to climate change. They should plan for new development in ways which reduce greenhouse gas emissions; actively support energy efficiency improvements to existing buildings; and set local sustainability requirements which are consistent with the government's policies and standards.

2.1.2 Building Regulations Part L 2021

The assessment of the development against policy targets has been carried out using the very latest Part L 2021 benchmarks. The Part L 2021 targets represent approximately a 30% reduction in carbon emissions in comparison to the Part L 2013 target.

Part L1 2021 is mandatory and requires that a building does not exceed the CO2 emission rate of that set by a Target Emission Rate (TER).

It also requires that a building does not exceed the Target Primary Energy Rate (TPER). The TER and TPER are calculated in accordance with the approved 2021 National Calculation Methodology (NCM).

2.1.3 The London Plan

The current version of the London plan is from March 2021 with the most up to date guidance on the preparation of Energy Assessments from June 2022, which has been used to structure this energy statement.

As this development is not greater than 1,000 m2 it is not considered as a major development and therefore the requirements of the London Plan should not strictly apply, however the guidance will still be followed, and every effort will be made to ensure the most energy efficient and carbon minimal design possible.

Policy SI 2 of the London Plan requires development proposals to make the fullest contribution to minimising carbon dioxide emissions through on site methods in accordance with the following energy hierarchy:

- Be lean: use less energy
- Be clean: supply energy efficiently
- Be green: use renewable energy

For Non-domestic developments, the current CO2 emission reduction target is set at a 35% improvement over the Part L 2021 Target Emission Rates. This 35% target needs to be met from on-site measures.

There is also a further target of 100% CO2 emission reduction that can be met through a cash in lieu off-set payment. The latest London Plan guidance states that a figure of £95 per tonne of CO2 over a period of 30 years should be used.

2.1.4 Policy Summary

From inspection of the relevant policies for the proposed development we consider that the following targets need to be met in order to comply with Part L 2021 Building Regulations and the London Plan.

- The new extension should try to demonstrate a 35% improvement in total CO_2 emissions over what is set out in Part L of the Building Regulations 2021 through on-site measures.
- To achieve 'Zero Carbon' any remaining emissions should be offset through a cash in lieu contribution set at £95 per tonne of CO2 for a period of 30 years.

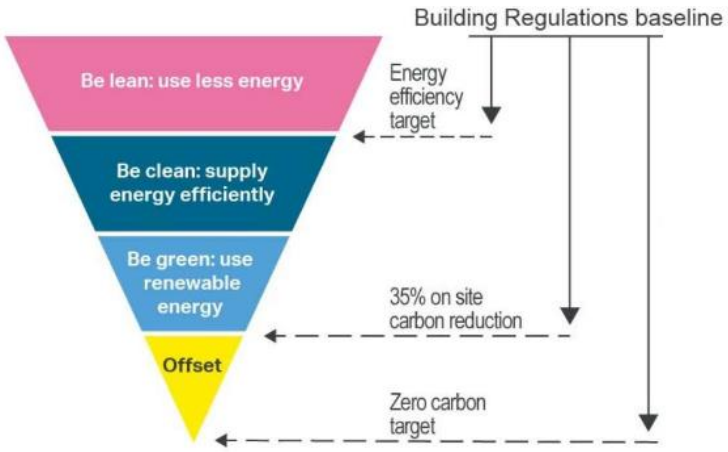


Figure 1 - Energy Hierarchy Diagram with Carbon Reduction Targets

3.0 Assessment Methodology

The following methodology has been used to calculate the CO2 emissions for the development under each of the Be Lean, Be Clean, and Be Green stages of the energy hierarchy.

3.1 Dynamic Simulation Modelling

EDSL TAS Dynamic Simulation Modelling software has been used for the energy and overheating assessment carried out. The EDSL TAS software has been approved by the Department for Communities and Local Government (DCLG) for use as a Dynamic Simulation Model (DSM) software package.

As part of its approval process, the TAS software had to demonstrate that it satisfies all of the tests and other requirements defined within sections 2 and 3 of the document “CIBSE TM33:2006, CIBSE standard tests for the assessment of building services design software”. The thermal modelling has also been carried out in accordance with CIBSE AM11 Building Energy and Environmental Modelling.

The following image is taken from the EDSL TAS software used for the energy and overheating assessments.

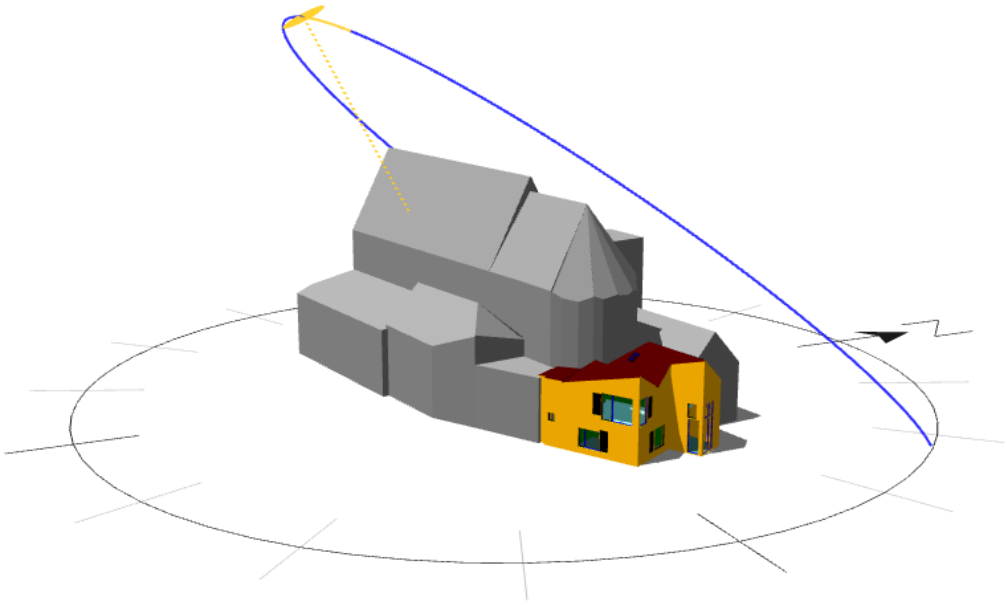


Figure 2 - 3D View of the EDSL TAS Model

3.2 Limitations

The appraisals within this strategy are based on the Building Regulations Part L (2021) calculation methodology and should not be understood as a predictive assessment of likely future energy requirements or otherwise.

Occupants may operate their systems differently, and/or the weather may be different from the assumptions made by Part L approved calculation methods, leading to differing energy requirements once the development is in operation.

Passing of an overheating assessment does not mean that the spaces will be comfortable all year round, but rather that the overheating risk is limited to an acceptable level.

Weather conditions at the site may be different to those within the weather data used and occupants may behave differently than suggested within this report, for example not opening windows when required. With the impacts of climate change, the increasing occurrence of extreme heat wave events are also likely to escalate.

Overheating can be subjective with vulnerable occupants such as infants or the elderly more likely to be affected. If an occupant is suffering from the effects of overheating, please do not hesitate to seek medical help.

All details outlined in this assessment have been based, wherever possible, on those provided by the client or sensible design assumptions. These should nevertheless be reviewed in detail with any discrepancies highlighted by the design team.

4.0 Energy Assessment

The following sections describe how each stage of the Energy Hierarchy have been modelled and how their associated Carbon Emissions have been calculated.

4.1 Baseline Target

The EDSL TAS modelling software automatically generates a notional building using the geometry for the proposed building, but allocating glazing coverage, U-values, and plant efficiency in accordance with the Elemental Method as defined in NCM modelling Guide 2021.

The software calculates an Emissions Rate for the Notional building which is the Target Emission Rate (TER) for the actual building. The TER is the emission rate which must be met in order to achieve Part L2 compliance, therefore this must be improved upon by 35% in order to comply with the requirements of the London Plan.

4.2 Be Lean

The following section describes the passive design and energy efficiency measures that have been considered and implemented within the proposed development.

4.2.1 Passive Design Measures

Passive design measures are those which reduce the initial energy demand of the building through passive means, for example wall insulation once installed requires no other means of operation and its performance is also unlikely to deteriorate.

Where possible the development has taken a fabric first approach to reducing the initial energy demand by the following methods:

Glazing Performance

Windows and glazed doors are be highly efficient double glazing and will have a low U-value of 1.2 W/m^2.K, helping to reduce the amount of heat loss through the glazing. They will also have a low G-Value 0.38 helping to reduce the amount of unwanted solar gains that can be a cause of overheating. Roof lights will have a U-Value of 1.5 W/m^2.K and G-Value of 0.3.

Thermal Envelope

The inclusion of high levels of thermal insulation not only helps to reduce the buildings overall energy demand and therefore carbon emissions, but it also plays a vital role in securing the occupant's thermal comfort.

It also helps to reduce the buildings peak heating and cooling loads required meaning that smaller plant equipment can be sized, helping to further improve not only carbon emissions but also the cost of the development.

The proposed walls and roofs will provide significant savings over the Part L limiting fabric parameters.

Air Permeability

The air permeability of the development is a measure of how much volume of air can penetrate through its fabric. Therefore, a well built, highly sealed building would result in less unwanted heat loss, and therefore provide a more efficient building.

Part L Building Regulations have a maximum limit of 8 $m^3/h.m^2$ that must be achieved, the proposed extension will target a value of 3 $m^3/h.m^2$.

Summary of Passive Design Measures

The table below shows a summary of the passive design measures included for within the development and how they compare against the Part L requirements.

Table 1 - Summary Table of Passive Design Measures

Parameter	Part L Limiting Values	Development Proposal	% Improvement
U-Values			
Walls	0.26 $W/m^2.K$	0.18 $W/m^2.K$	31%
Floors	0.18 $W/m^2.K$	0.16 $W/m^2.K$	11%
Roofs	0.16 $W/m^2.K$	0.16 $W/m^2.K$	0%
Glazing	1.60 $W/m^2.K$	1.20 $W/m^2.K$	25%
Roof Lights	2.20 $W/m^2.K$	1.50 $W/m^2.K$	32%
Air Permeability	8 $m^3/h.m^2$	3 $m^3/h.m^2$	63%

The summary of passive measures shows that the proposed development will be an improvement over the Part L limiting fabric parameters.

4.2.2 Energy Efficiency Measures

Energy efficiency measures are those which seek to supply to remaining demand for energy, after the initial demand has been lowered through passive means, in the most efficient way.

The following energy efficiency measures have been incorporated within the proposed development:

Heating and Hot Water

At this stage, as directed by the London Plan, the heating and hot water is assumed to be provided by air source heat pump systems with seasonal efficiencies of 2.86 for hot water and 2.64 for space heating.

(This is so only the carbon savings through passive design and energy efficiency measures are calculated at this stage. The efficiencies of the Actual Air Source Heat Pumps that will be used will be taken into consideration under the Be Green Stage of the assessment).

The hot water tank is assumed to be 180 litres with a heat loss of 1.35 kWh/day.

Cooling

No mechanical cooling has been assumed for the building at this stage.

Lighting

The lighting for the development will consist of low energy LED lighting throughout with an assumed efficacy of 110 lumens/watt.

Ventilation

The ventilation is assumed to be heat recovery mechanical ventilation within the main areas. We have assumed that the multi-purpose room and large kitchen/office will have a specific fan power of 0.63 W/l/s and a heat recovery efficiency of 94%. The entrance hall and counseling room will have a specific fan power of 0.91 W/l/s and a heat recovery efficiency of 93%.

The DWC will have a local extract fan with a specific fan power of 0.3 W/l/s.

Power Factor Correction

We have assumed that the extension will have a power factor of greater than 0.95.

4.2.3 Regulated and Unregulated Energy Sources

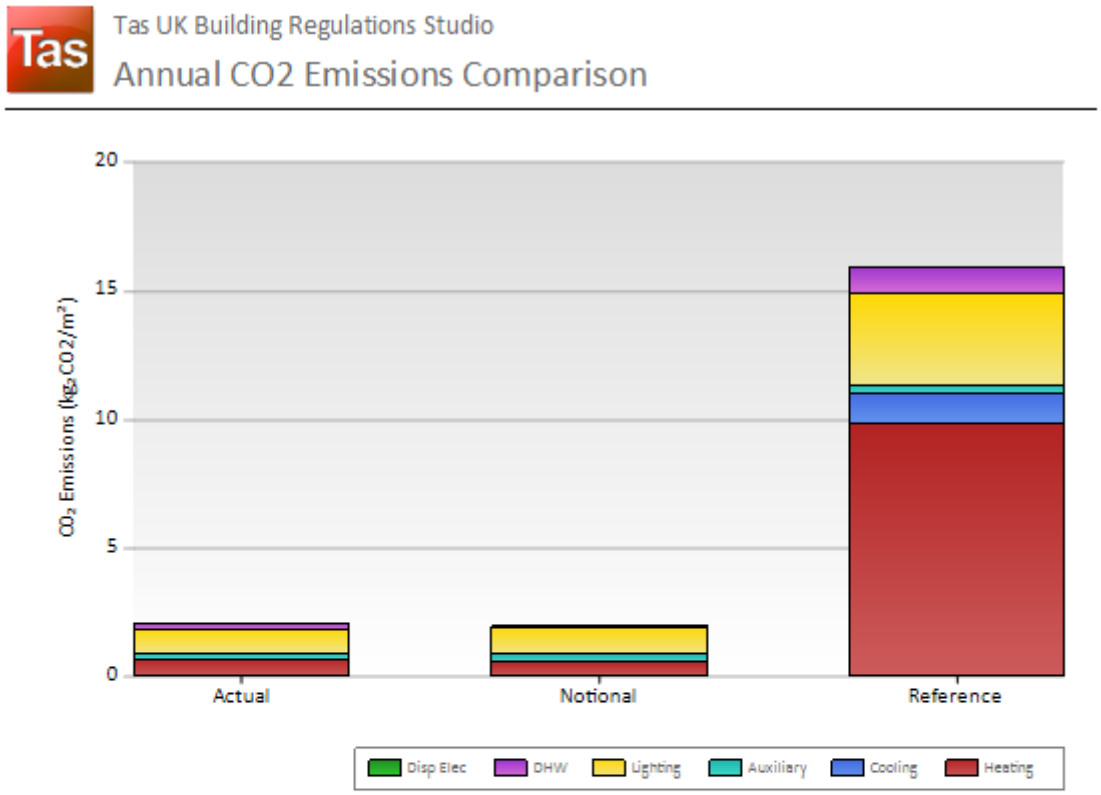
Regulated energy sources are those that fall under the Building Regulations such as Space Heating, Hot Water, Space Cooling, Lighting and Auxiliary Loads (Pumps, Fans, and Controls). Unregulated energy sources such as small power, are not a part of the Part L Assessment however every effort should be made in order to reduce the consumption from unregulated sources.

To reduce the demand from unregulated sources the following is recommended:

- Any White Goods installed should be at least A/A+ rated.
- Occupants should be encouraged to turn TVs, computers etc. off at night when not in use.

4.2.4 Be Lean Results

The results below show total carbon emissions in kgCO2/m2 for the Be Lean Measures (Actual Building) and for the Baseline Part L Target (Notional Building). This notional target will serve as the constant baseline throughout the Be Clean and Be Green Stages also.



	Actual	*Notional*	*Reference*
Heating (kgCO2/m²)	0.67	0.58	9.88
Cooling (kgCO2/m²)	0.00	0.00	1.17
Auxiliary (kgCO2/m²)	0.27	0.26	0.28
Lighting (kgCO2/m²)	0.93	1.05	3.60
DHW (kgCO2/m²)	0.26	0.10	1.02
Displaced Electricity (kgCO2/m²)	0.00	0.00	0.00
*Equipment (kgCO2/m²) **	*2.60*	*2.60*	*2.67*
Total (kgCO2/m²)	2.12	1.99	15.95
Total Floor Area (m²)	137.19	137.19	137.19

** Energy used by equipment does not contribute to total value - it is presented here for comparison only*

Figure 3 - Baseline and Be Lean Stage Carbon Emission Results

The results show that by implementing the Be Lean measures the carbon emissions would be 2.12 kgCO2/m^2, compared to 1.99 kgCO2/m^2 for the Baseline. This means that at this stage the proposed design would not currently satisfy the Part L Building Regulations.

The Part L BRUKL Output sheet for the Be Lean Stage of the Energy Hierarchy can be found within Appendix A.

4.3 Be Clean

The following sections discuss the infrastructure and clean energy supply measures that have been considered for the Development to further reduce regulated CO2 emissions.

4.3.1 Heating Hierarchy

Due to the small size of the extension the possibility of connecting to an Area Wide Heat Network, other secondary heat source, using a combined heat and power system (CHP), or the use of low-NOX boilers have all been deemed technically unfeasible.

Better results can be more easily achieved through the use of renewable technologies.

4.3.2 Be Clean Results

As the development is not feasible for any measures under the Be Clean Stage there will be no further carbon reductions.

4.4 Be Green

The following sections discuss the low carbon and renewable technologies that have been considered for the development.

4.4.1 Assessment of Renewable Technologies

The table below provides a brief analysis of the different renewables considered for the site and comments on their overall feasibility.

Table 2 - Low Carbon and Renewable Technologies Analysis

Low Carbon or Renewable Technology	Comments	Feasible
Air Source Heat Pumps	ASHPs can be used to provide both heating and hot water. With a high Seasonal Coefficient of Performance (SCOP) the benefit of a providing heating from an ASHP improves.	Yes
Water Source Heat Pumps	Given that there is no suitable watercourse within the vicinity of the developments this technology would not be feasible.	No
Ground Source Heat Pumps	Ground Source Heat Pumps are usually more efficient than ASHP as the temperature of the ground is more stable throughout the year. However, given that the site is constrained, the installation of Ground Source would not be economically or practically feasible.	No
Photovoltaic Solar Panels	PV panels could be installed on suitable areas of roof. PV panels are a great technology that can produce green electricity with very little ongoing maintenance.	Yes
Solar Hot Water Panels	Solar Hot Water Panels would also need to be installed on the roof of the development. As any free roof space would be better utilised for PV panels, Solar Hot Water would not be feasible.	No
Biomass Boiler	A biomass boiler feed from wood chips/pellets would need a constant supply, increasing the amount of traffic on the site. A large storage area would also be required to store the fuel on the site. There are also concerns with local air quality surrounding the use of Biomass.	No
Wind Turbines	Large wind turbines would be required to produce any significant electrical savings. As the development is within an already built-up area the installation of any such turbine would be unfeasible	No

From brief assessment of the various renewable technologies available we can see that air source heat pumps and Photovoltaic panels would be the most feasible renewable technologies to install for the proposed development.

Air Source Heat Pumps

The heating is assumed to be provided by a Daikin EDLA09D3W1 with a seasonal efficiency of 4.72. Hot water is assumed to be provided by a Daikin EHVH04SU18EA6V with a seasonal efficiency of 3.26.

Photovoltaic Solar Panels

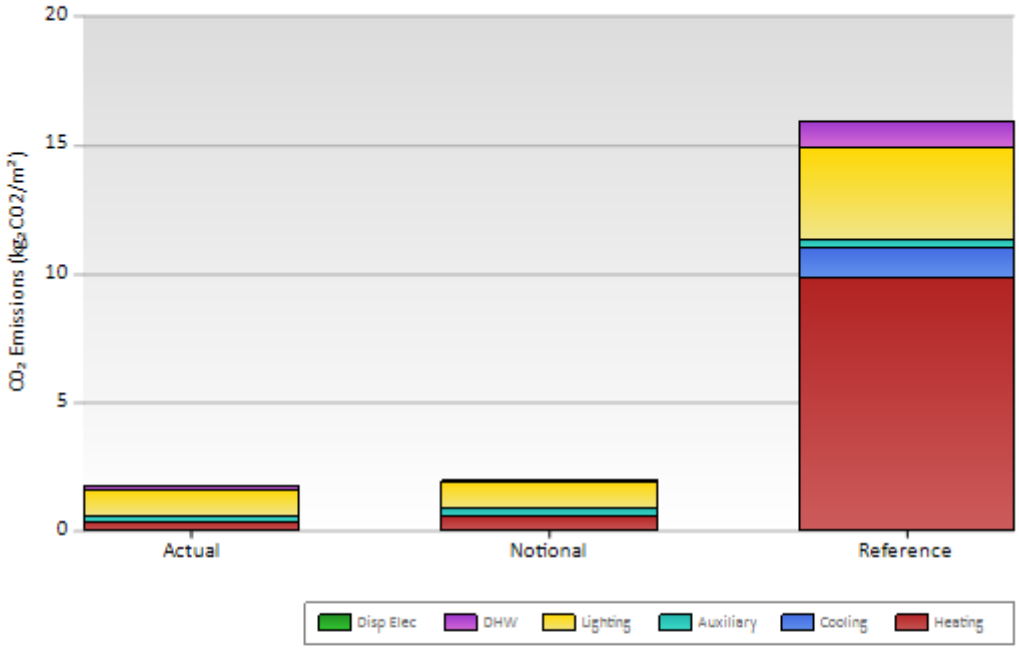
At this time, we have not assumed any Photovoltaic solar panels will be installed.

4.4.2 Be Green Results

The results below show total carbon emissions in kgCO2/m2 and tonnes CO2 for the Be Green Stage of the Energy Hierarchy.

Tas UK Building Regulations Studio

Annual CO2 Emissions Comparison



	Actual	*Notional*	*Reference*
Heating (kg_2CO2/m^2)	0.38	0.58	9.88
Cooling (kg_2CO2/m^2)	0.00	0.00	1.17
Auxiliary (kg_2CO2/m^2)	0.27	0.26	0.28
Lighting (kg_2CO2/m^2)	0.93	1.05	3.60
DHW (kg_2CO2/m^2)	0.22	0.10	1.02
Displaced Electricity (kg_2CO2/m^2)	0.00	0.00	0.00
*Equipment (kg_2CO2/m^2) **	*2.60*	*2.60*	*2.67*
Total (kg_2CO2/m^2)	1.80	1.99	15.95
Total Floor Area (m^2)	137.19	137.19	137.19

** Energy used by equipment does not contribute to total value - it is presented here for comparison only*

Figure 4 - Baseline and Be Green Stage Carbon Emission Results

The results show that by implementing the Be Green measures the carbon emissions would be 1.80 kgCO2/m^2, compared to 1.99 kgCO2/m^2 for the Baseline. This means that at this stage the proposed design would satisfy the Part L Building Regulations with an overall improvement of 9.55%.

The extension would also receive an EPC rating of 7 and a Banding of A. The Part L BRUKL Output sheets for the Be Green Stage of the Energy Hierarchy can be found within Appendix B.

5.0 Carbon Offset Payment

The final results show that the proposed development would still be emitting 1.80 Tonnes of CO2 per annum. The off-set payment under the latest London Plan guidance sets a figure of £95 per tonne of CO2 for a period of 30 years.

This equates to a total off-set payment of £5,130 in order for the development to meet the Zero Carbon target. (Although as this is not a major development, the final net zero target should not be a mandatory requirement).

6.0 Overheating

As recommended by the London Plan an overheating risk analysis has also been undertaken on the proposed habitable rooms.

CIBSE TM 52 is the latest guidance about overheating for non-domestic buildings and is thought to be superior to other industry standard overheating calculation methodologies.

The TM52 calculation is an adaptive overheating calculation meaning that the ideal comfort temperature inside a building will be related to the outdoor air temperature. Whereas other overheating calculations such as CIBSE Guide A suggest a fixed upper limit of 28°C that cannot be exceeded for 1% of the occupied time, TM 52 has an adaptive comfort temperature limit that responds to the outdoor temperature at that time.

TM 52 has 3 criteria to assess the level of overheating and it must pass 2 of the 3 in order to pass the guidance overall. The TM52 overheating compliance criteria is as follows.

Criterion 1: Hours of Exceedance – The number of hours during which Δ*T* is greater than or equal to one degree (K) during the period May to September inclusive shall not be more than 3% of the occupied hours.

Criterion 2: Daily Weighted Exceedance – To allow for the severity of overheating the weighted exceedance shall be less than or equal to 6 in any one day.

Criterion 3: Upper Limit Temperature – To set an absolute maximum value for the indoor operative temperature the value of Δ*T* shall not exceed 4 K.

The CIBSE TM52 Overheating Assessment has been carried out using EDSL TAS Dynamic Simulation Modelling software complaint with CIBSE AM11. Even if a room is shown to satisfy the overheating criteria it does not mean that it will never suffer from overheating, it only means that the overheating risk has been lowered to an acceptable level. Weather conditions at the time will be different to those used for the model and building may be controlled or used different to what has been assumed.

6.1 CIBSE TM52 Modelling Assumptions

We have made the following assumptions when carrying out the TM52 overheating risk analysis assessment.

- We have used CIBSE London Central DSY 1 2020 weather data.
- That the occupied hours are between 9am – 5pm.
- All openable windows as shown on the architectural drawings will be able to open 100% when required during occupied hours.
- The main entrance doors will also be able to open 100% when required during occupied hours.
- Roof lights are assumed to be able to open 100% during both occupied hours and unoccupied hours.
- We have assumed that there are 2 No. 1800mm high by 800mm wide secure ventilation panels with 60% free open area adjacent to the windows within the Kitchen/Office and Multi-Purpose Room. These can open during both occupied hours and unoccupied hours.
- We have assumed that all windows and roof lights will have internal blinds, we have also assumed that the Kitchen/Office and Multi-Purpose room windows will have external shutters/solar shades.
- We have assumed 8 occupants within the kitchen/office, 2 in the Counselling, 4 in the Entrance, and 20 in the Multi-Purpose Room.
- Lighting gain was assumed to be 6 W/m2 but linked to daylight control sensors within the main rooms.
- Equipment gains were assumed to be 10 W/m2 within the Kitchen/Office and 5 W/m2 in all other habitable rooms.
- 10 l/s/p of fresh air mechanical ventilation provided to each room. We have also assumed that this can run through the night (outside of occupied hours) if required.

6.2 CIBSE TM52 Results

The CIBSE TM52 overheating results are as follows:

Table 3 - CIBSE TM52 Results

Zone	Occupied Summer Hours	Max. Exceedable Hours	Criterion 1 Hours Exceeding Comfort Range	Criterion 2 Peak Daily Weighted Exceedance	Criterion 3 Hours Exceeding Absolute Limit	Result
M0.01 - Entrance Hall	1224	36	9	6.0	0	Pass
M0.02 - Large Kitchen + Office	1224	36	13	11.0	0	Pass
M0.06 - Counselling Room	1224	36	5	3.0	0	Pass
M0.08 - Multi-Purpose Room	1224	36	23	16.0	0	Pass

These results indicate that with the building as described above it would satisfy the CIBSE TM52 overheating risk analysis. This is only for DSY 1 2020 weather data as required by CIBSE TM52.

Other types of weather data simulating different summer conditions or future weather conditions would show the rooms as failing, therefore some form of mechanical cooling may be required in the future to prevent overheating. This overheating analysis has been carried out at an early design stage and should be remodelled at later design stages once more exact details are known.

Appendix A - Be Lean Stage Part L Calculation Sheet and Predicted Energy Performance Certificate

BRUKL Output Document

HM Government

Compliance with England Building Regulations Part L 2021

Project name

St Mary's Church

As built

Date: Thu Jul 21 09:58:26 2022

Administrative information

Building Details

Address: St Mary's Church, Primrose Hill,

Certification tool

Calculation engine: TAS

Calculation engine version: "v9.5.4"

Interface to calculation engine: TAS

Interface to calculation engine version: v9.5.4

BRUKL compliance check version: v6.1.b.0

Certifier details

Name: Jason Welsh

Telephone number: 01206 489019

Address: Suite 3, Aster House, Lanswood Park, Elmstead Market, Colchester, CO7 7FD

Foundation area [m^2]: 66.77

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

The building does not comply with England Building Regulations Part L 2021

Target CO_2 emission rate (TER), $kgCO_2/m^2$.annum	1.99	
Building CO_2 emission rate (BER), $kgCO_2/m^2$.annum	2.12	
Target primary energy rate (TPER), kWh/m^2.annum	21.18	
Building primary energy rate (BPER), kWh/m^2.annum	22.56	
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	0.18	0.18	External Wall
Floors	0.18	0.16	0.16	Ground Floor
Pitched roofs	0.16	0.16	0.16	Roof
Flat roofs	0.18	-	-	No flat roofs in project
Windows** and roof windows	1.6	1.2	1.2	Win 1 - Open
Rooflights***	2.2	1.5	1.5	RL 2
Personnel doors^	1.6	-	-	No personnel doors in project
Vehicle access & similar large doors	1.3	-	-	No vehicle access or similar large doors in project
High usage entrance doors	3	-	-	No high usage entrance doors in project

$U_{a\text{-}Limit}$ = Limiting area-weighted average U-values [W/(m^2K)]

$U_{i\text{-}Calc}$ = Calculated maximum individual element U-values [W/(m^2K)]

$U_{a\text{-}Calc}$ = Calculated area-weighted average U-values [W/(m^2K)]

* 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/m^2K

N.B.: 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	NO
Whole building electric power factor achieved by power factor correction	>0.95

1- Natural Vent

	Heating efficiency	**Cooling efficiency**	**Radiant efficiency**	**SFP [W/(l/s)]**	**HR efficiency**
This system	2.64	-	-	-	-
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- Extract (M0.04 - DWC)

	Heating efficiency	**Cooling efficiency**	**Radiant efficiency**	**SFP [W/(l/s)]**	**HR efficiency**
This system	2.64	-	-	-	-
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.					

3- MVHR 600 (2 Zones)

	Heating efficiency	**Cooling efficiency**	**Radiant efficiency**	**SFP [W/(l/s)]**	**HR efficiency**
This system	2.64	-	-	-	0.94
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.					

4- MVHR 200 (3 Zones)

	Heating efficiency	**Cooling efficiency**	**Radiant efficiency**	**SFP [W/(l/s)]**	**HR efficiency**
This system	2.64	-	-	-	0.93
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- ASHP Hot Water

	Water heating efficiency	**Storage loss factor [kWh/litre per day]**
This building	2.86	0.01
Standard value	2*	N/A
* Standard shown is for all types except absorption and gas engine heat pumps.		

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
M0.01 - Entrance Hall	-	-	-	-	0.9	-	-	-	-	-	N/A
M0.02 - Large Kitchen+Office	-	-	-	-	0.6	-	-	-	-	-	N/A
M0.04 - DWC	0.3	-	-	-	-	-	-	-	-	-	N/A
M0.06 - Counselling Room	-	-	-	-	0.9	-	-	-	-	-	N/A
M0.07 - Landing	-	-	-	-	0.9	-	-	-	-	-	N/A
M0.08 - Multi-Purpose Room	-	-	-	-	0.6	-	-	-	-	-	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
M0.01 - Entrance Hall	-	110	-
M0.02 - Large Kitchen+Office	110	-	-
M0.03 - Sacristy Storage	110	-	-
M0.04 - DWC	-	-	-
GF - Lift	-	-	-
GF - Stairs to Undercroft	-	-	-
M0.06 - Counselling Room	110	-	-
M0.07 - Landing	-	-	-
M0.08 - Multi-Purpose Room	-	-	-
M0.09 - Store	110	-	-
M0.10 - Plant	110	-	-
FF - Lift	-	-	-

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?
M0.01 - Entrance Hall	NO (-5%)	NO
M0.02 - Large Kitchen+Office	NO (-60%)	NO
M0.06 - Counselling Room	NO (-76%)	NO
M0.08 - Multi-Purpose Room	NO (-20%)	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?	NO
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]	137	137
External area [m^2]	322	322
Weather	LON	LON
Infiltration [m^3/hm^2@ 50Pa]	3	3
Average conductance [W/K]	99	94
Average U-value [W/m^2K]	0.31	0.29
Alpha value* [%]	39.03	24.03

* 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/m^2]

	Actual	Notional
Heating	4.4	3.78
Cooling	0	0
Auxiliary	1.98	1.94
Lighting	6.8	7.72
Hot water	1.89	0.73
Equipment*	19.24	19.24
TOTAL**	**15.08**	**14.17**

* 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^2]

	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/m^2]	41.87	37.84
Primary energy [kWh/m^2]	22.56	21.18
Total emissions [kg/m^2]	2.12	1.99

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] Central heating using water: floor heating, [HS] ASHP, [HFT] Electricity, [CFT] Electricity										
	Actual	49.3	0	5.2	0	1.1	2.64	0	2.64	0
	Notional	40.6	0	4.3	0	1.1	2.64	0	----	----
[ST] Central heating using water: floor heating, [HS] ASHP, [HFT] Electricity, [CFT] Electricity										
	Actual	24.6	0	2.6	0	1.1	2.64	0	2.64	0
	Notional	24	0	2.5	0	1.1	2.64	0	----	----
[ST] Central heating using water: floor heating, [HS] ASHP, [HFT] Electricity, [CFT] Electricity										
	Actual	39.5	0	4.2	0	2.3	2.64	0	2.64	0
	Notional	37	0	3.9	0	2.6	2.64	0	----	----
[ST] Central heating using water: floor heating, [HS] ASHP, [HFT] Electricity, [CFT] Electricity										
	Actual	46.5	0	4.9	0	2.4	2.64	0	2.64	0
	Notional	42.3	0	4.5	0	2.2	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

Energy Performance Certificate

Non-Domestic Building

HM Government

St Mary's Church
Primrose Hill

Certificate Reference Number:
3870-0980-0108-0325-9738

This certificate shows the energy rating of this building. It indicates the energy efficiency of the building fabric and the heating, ventilation, cooling and lighting systems. The rating is compared to two benchmarks for this type of building: one appropriate for new buildings and one appropriate for existing buildings. There is more advice on how to interpret this information in the guidance document *Energy Performance Certificates for the construction, sale and let of non-dwellings* available on the Government's website at www.gov.uk/government/collections/energy-performance-certificates.

Energy Performance Asset Rating

More energy efficient

A+

Net zero CO_2 emissions

A 0-25

B 26-50

C 51-75

D 76-100

E 101-125

F 126-150

G Over 150

9 **This is how energy efficient the building is.**

Less energy efficient

Technical information

Main heating fuel:	Grid Supplied Electricity
Building environment:	Heating and Mechanical Ventilation
Total useful floor area (m^2):	137
Building complexity:	Level 5
Building emission rate ($kgCO_2/m^2$ per year):	2.12
Primary energy use (kWh/m^2 per year):	22.56

Benchmarks

Buildings similar to this one could have ratings as follows:

8 If newly built

33 If typical of the existing stock

Administrative information

This is an Energy Performance Certificate as defined in the Energy Performance of Buildings Regulations 2012 as amended.

Assessment Software:	TAS v9.5.4 using calculation engine TAS v9.5.4
Property Reference:	UPRN-123456789012
Assessor Name:	Jason Welsh
Assessor Number:	LCEA122167
Accreditation Scheme:	CIBSE Certification Limited
Assessor Qualifications:	NOS5
Employer/Trading Name:	Elmstead Energy Assessors & Building Services
Employer/Trading Address:	Suite 3, Aster House, Lanswood Park, Elmstead Market, Colchester, CO7 7FD
Issue Date:	21 Jul 2022
Valid Until:	20 Jul 2032 (unless superseded by a later certificate)
Related Party Disclosure:	Not related to the owner

Recommendations for improving the energy performance of the building are contained in the associated Recommendation Report: 7812-4940-2330-9452-9432

About this document and the data in it

This document has been produced following an energy assessment undertaken by a qualified Energy Assessor, accredited by CIBSE Certification Limited. You can obtain contact details of the Accreditation Scheme at www.cibsecertification.com.

A copy of this certificate has been lodged on a national register as a requirement under the Energy Performance of Buildings Regulations 2012 as amended. It will be made available via the online search function at www.ndepcregister.com. The certificate (including the building address) and other data about the building collected during the energy assessment but not shown on the certificate, for instance heating system data, will be made publicly available at www.opendatacommunities.org.

This certificate and other data about the building may be shared with other bodies (including government departments and enforcement agencies) for research, statistical and enforcement purposes. For further information about how data about the property are used, please visit www.ndepcregister.com. To opt out of having information about your building made publicly available, please visit www.ndepcregister.com/optout.

There is more information in the guidance document *Energy Performance Certificates for the construction, sale and let of non-dwellings* available on the Government website at: www.gov.uk/government/collections/energy-performance-certificates. It explains the content and use of this document and advises on how to identify the authenticity of a certificate and how to make a complaint.

Opportunity to benefit from a Green Deal on this property

The Green Deal can help you cut your energy bills by making energy efficiency improvements at no upfront costs. Use the Green Deal to find trusted advisors who will come to your property, recommend measures that are right for you and help you access a range of accredited installers. Responsibility for repayments stays with the property - whoever pays the energy bills benefits so they are responsible for the payments.

To find out how you could use Green Deal finance to improve your property please call 0300 123 1234.

Appendix B - Be Green Stage Part L Calculation Sheet and Predicted Energy Performance Certificate

BRUKL Output Document

HM Government

Compliance with England Building Regulations Part L 2021

Project name

St Mary's Church

As built

Date: Thu Jul 21 10:17:52 2022

Administrative information

Building Details

Address: St Mary's Church, Primrose Hill,

Certification tool

Calculation engine: TAS

Calculation engine version: "v9.5.4"

Interface to calculation engine: TAS

Interface to calculation engine version: v9.5.4

BRUKL compliance check version: v6.1.b.0

Certifier details

Name: Jason Welsh

Telephone number: 01206 489019

Address: Suite 3, Aster House, Lanswood Park, Elmstead Market, Colchester, CO7 7FD

Foundation area [m^2]: 66.77

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	1.99	
Building CO_2 emission rate (BER), $kgCO_2/m^2$.annum	1.8	
Target primary energy rate (TPER), kWh/m^2.annum	21.18	
Building primary energy rate (BPER), kWh/m^2.annum	19.23	
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	0.18	0.18	External Wall
Floors	0.18	0.16	0.16	Ground Floor
Pitched roofs	0.16	0.16	0.16	Roof
Flat roofs	0.18	-	-	No flat roofs in project
Windows** and roof windows	1.6	1.2	1.2	Win 1 - Open
Rooflights***	2.2	1.5	1.5	RL 2
Personnel doors^	1.6	-	-	No personnel doors in project
Vehicle access & similar large doors	1.3	-	-	No vehicle access or similar large doors in project
High usage entrance doors	3	-	-	No high usage entrance doors in project

$U_{a\text{-}Limit}$ = Limiting area-weighted average U-values [$W/(m^2K)$]

$U_{i\text{-}Calc}$ = Calculated maximum individual element U-values [$W/(m^2K)$]

$U_{a\text{-}Calc}$ = Calculated area-weighted average U-values [$W/(m^2K)$]

* 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/m^2K

N.B.: 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	NO
Whole building electric power factor achieved by power factor correction	>0.95

1- Natural Vent

	Heating efficiency	**Cooling efficiency**	**Radiant efficiency**	**SFP [W/(l/s)]**	**HR efficiency**
This system	4.72	-	-	-	-
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- Extract (M0.04 - DWC)

	Heating efficiency	**Cooling efficiency**	**Radiant efficiency**	**SFP [W/(l/s)]**	**HR efficiency**
This system	4.72	-	-	-	-
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.					

3- MVHR 600 (2 Zones)

	Heating efficiency	**Cooling efficiency**	**Radiant efficiency**	**SFP [W/(l/s)]**	**HR efficiency**
This system	4.72	-	-	-	0.94
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.					

4- MVHR 200 (3 Zones)

	Heating efficiency	**Cooling efficiency**	**Radiant efficiency**	**SFP [W/(l/s)]**	**HR efficiency**
This system	4.72	-	-	-	0.93
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- ASHP Hot Water

	Water heating efficiency	**Storage loss factor [kWh/litre per day]**
This building	3.26	0.01
Standard value	2*	N/A
* Standard shown is for all types except absorption and gas engine heat pumps.		

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
M0.01 - Entrance Hall	-	-	-	-	0.9	-	-	-	-	-	N/A
M0.02 - Large Kitchen+Office	-	-	-	-	0.6	-	-	-	-	-	N/A
M0.04 - DWC	0.3	-	-	-	-	-	-	-	-	-	N/A
M0.06 - Counselling Room	-	-	-	-	0.9	-	-	-	-	-	N/A
M0.07 - Landing	-	-	-	-	0.9	-	-	-	-	-	N/A
M0.08 - Multi-Purpose Room	-	-	-	-	0.6	-	-	-	-	-	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
M0.01 - Entrance Hall	-	110	-
M0.02 - Large Kitchen+Office	110	-	-
M0.03 - Sacristy Storage	110	-	-
M0.04 - DWC	-	-	-
GF - Lift	-	-	-
GF - Stairs to Undercroft	-	-	-
M0.06 - Counselling Room	110	-	-
M0.07 - Landing	-	-	-
M0.08 - Multi-Purpose Room	-	-	-
M0.09 - Store	110	-	-
M0.10 - Plant	110	-	-
FF - Lift	-	-	-

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?
M0.01 - Entrance Hall	NO (-5%)	NO
M0.02 - Large Kitchen+Office	NO (-60%)	NO
M0.06 - Counselling Room	NO (-76%)	NO
M0.08 - Multi-Purpose Room	NO (-20%)	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?	NO
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]	137	137
External area [m^2]	322	322
Weather	LON	LON
Infiltration [m^3/hm^2@ 50Pa]	3	3
Average conductance [W/K]	99	94
Average U-value [W/m^2K]	0.31	0.29
Alpha value* [%]	39.03	24.03

* 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/m^2]

	Actual	Notional
Heating	2.46	3.78
Cooling	0	0
Auxiliary	1.98	1.94
Lighting	6.8	7.72
Hot water	1.66	0.73
Equipment*	19.24	19.24
TOTAL**	**12.9**	**14.17**

* 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^2]

	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/m^2]	41.87	37.84
Primary energy [kWh/m^2]	19.23	21.18
Total emissions [kg/m^2]	1.8	1.99

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] Central heating using water: floor heating, [HS] ASHP, [HFT] Electricity, [CFT] Electricity										
	Actual	49.3	0	2.9	0	1.1	4.72	0	4.72	0
	Notional	40.6	0	4.3	0	1.1	2.64	0	----	----
[ST] Central heating using water: floor heating, [HS] ASHP, [HFT] Electricity, [CFT] Electricity										
	Actual	24.6	0	1.5	0	1.1	4.72	0	4.72	0
	Notional	24	0	2.5	0	1.1	2.64	0	----	----
[ST] Central heating using water: floor heating, [HS] ASHP, [HFT] Electricity, [CFT] Electricity										
	Actual	39.5	0	2.3	0	2.3	4.72	0	4.72	0
	Notional	37	0	3.9	0	2.6	2.64	0	----	----
[ST] Central heating using water: floor heating, [HS] ASHP, [HFT] Electricity, [CFT] Electricity										
	Actual	46.5	0	2.7	0	2.4	4.72	0	4.72	0
	Notional	42.3	0	4.5	0	2.2	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

Energy Performance Certificate

Non-Domestic Building

HM Government

St Mary's Church
Primrose Hill

Certificate Reference Number:
1450-8839-8014-6680-5216

This certificate shows the energy rating of this building. It indicates the energy efficiency of the building fabric and the heating, ventilation, cooling and lighting systems. The rating is compared to two benchmarks for this type of building: one appropriate for new buildings and one appropriate for existing buildings. There is more advice on how to interpret this information in the guidance document *Energy Performance Certificates for the construction, sale and let of non-dwellings* available on the Government's website at www.gov.uk/government/collections/energy-performance-certificates.

Energy Performance Asset Rating

More energy efficient

A+

Net zero CO_2 emissions

A 0-25

B 26-50

C 51-75

D 76-100

E 101-125

F 126-150

G Over 150

7 This is how energy efficient the building is.

Less energy efficient

Technical information

Main heating fuel:	Grid Supplied Electricity
Building environment:	Heating and Mechanical Ventilation
Total useful floor area (m^2):	137
Building complexity:	Level 5
Building emission rate ($kgCO_2/m^2$ per year):	1.8
Primary energy use (kWh/m^2 per year):	19.23

Benchmarks

Buildings similar to this one could have ratings as follows:

8 If newly built

33 If typical of the existing stock

Administrative information

This is an Energy Performance Certificate as defined in the Energy Performance of Buildings Regulations 2012 as amended.

Assessment Software:	TAS v9.5.4 using calculation engine TAS v9.5.4
Property Reference:	UPRN-123456789012
Assessor Name:	Jason Welsh
Assessor Number:	LCEA122167
Accreditation Scheme:	CIBSE Certification Limited
Assessor Qualifications:	NOS5
Employer/Trading Name:	Elmstead Energy Assessors & Building Services
Employer/Trading Address:	Suite 3, Aster House, Lanswood Park, Elmstead Market, Colchester, CO7 7FD
Issue Date:	21 Jul 2022
Valid Until:	20 Jul 2032 (unless superseded by a later certificate)
Related Party Disclosure:	Not related to the owner

Recommendations for improving the energy performance of the building are contained in the associated Recommendation Report: 3581-9288-3381-5449-4765

About this document and the data in it

This document has been produced following an energy assessment undertaken by a qualified Energy Assessor, accredited by CIBSE Certification Limited. You can obtain contact details of the Accreditation Scheme at www.cibsecertification.com.

A copy of this certificate has been lodged on a national register as a requirement under the Energy Performance of Buildings Regulations 2012 as amended. It will be made available via the online search function at www.ndepcregister.com. The certificate (including the building address) and other data about the building collected during the energy assessment but not shown on the certificate, for instance heating system data, will be made publicly available at www.opendatacommunities.org.

This certificate and other data about the building may be shared with other bodies (including government departments and enforcement agencies) for research, statistical and enforcement purposes. For further information about how data about the property are used, please visit www.ndepcregister.com. To opt out of having information about your building made publicly available, please visit www.ndepcregister.com/optout.

There is more information in the guidance document *Energy Performance Certificates for the construction, sale and let of non-dwellings* available on the Government website at: www.gov.uk/government/collections/energy-performance-certificates. It explains the content and use of this document and advises on how to identify the authenticity of a certificate and how to make a complaint.

Opportunity to benefit from a Green Deal on this property

The Green Deal can help you cut your energy bills by making energy efficiency improvements at no upfront costs. Use the Green Deal to find trusted advisors who will come to your property, recommend measures that are right for you and help you access a range of accredited installers. Responsibility for repayments stays with the property - whoever pays the energy bills benefits so they are responsible for the payments.

To find out how you could use Green Deal finance to improve your property please call 0300 123 1234.