Friday, 27 September 2024

# London Plan Energy Statement

123 Uxbridge Road
Hillingdon
UB10 0LQ

Overall Result **Achieved**

*Subject to Conditions*

# Contents

## Select one of the sections below



Please Note: Compliance reports for each section of the energy hierarchy are available in the project folder.

## Energy Statement

Energy Statements are required by local authorities to ensure a proposed development achieves the set-out energy efficiency and $CO_2$ reduction requirements that go beyond Approved Document Part L Regulations.

This Report outlines design principles the development will consider adopting to adhere to local authority requirements.

| | |
|---|---|
| Regulations | Approved Document L Volume 2 |
| Building Usage | Commercial & Residental |
| Revision | Rev 01 |
| Floor Area | 521 $m^2$ |
| Weather Data | Thames Valley |
| Local Authority | Hillingdon Council |
| Requirement | 35% $CO_2$ Reduction |

| Authorised By | Dated |
|---|---|
| Joshua Cunningham | Friday, 27 September 2024 |

# 1.0 Development Summary

## 1.1 Statement Preparation

An Energy Statement has been prepared on behalf of Focus International Christian Centre [hereafter referred to as 'the applicant'] to support the development of 123 Uxbridge Road [hereafter the 'proposed development'].

This Statement summarises the pertinent policies and requirements applicable to the proposed development. The principal target is to provide at least a 35% reduction in $CO_2$ emissions.

Please Note: Read the attached foreword in conjunction with this Energy Statement.

## 1.2 Site Description

The applicant proposes Part two-storey, part single-storey rear and side extension; part single-storey, part two-storey and part three-storey front and side extension.

The proposed development is a three-storey building, surrounded by a mixture of residential and commercial premises. The proposed development does not have any listed buildings, conservation areas, or scheduled monuments in its immediate environment warranting exemptions from energy efficiency requirements.

# 2.0 Planning Policy

## 2.1 Policy SI 2 Minimising greenhouse gas emissions

A. Major development should be net zero-carbon.151 This means reducing greenhouse gas emissions in operation and minimising both annual and peak energy demand in accordance with the following energy hierarchy:

1. Be Lean: use less energy and manage demand during operation
2. Be Clean: exploit local energy resources (such as secondary heat) and supply energy efficiently and cleanly
3. Be Green: maximise opportunities for renewable energy by producing, storing and using renewable energy on-site
4. Be Seen: monitor, verify and report on energy performance.

B. Major development proposals should include a detailed energy strategy to demonstrate how the zero-carbon target will be met within the framework of the energy hierarchy.

C. A minimum on-site reduction of at least 35 per cent beyond Building Regulations152 is required for major development. Residential development should achieve 10 per cent, and non-residential development should achieve 15 per cent through energy efficiency measures. Where it is clearly demonstrated that the zero-carbon target cannot be fully achieved on-site, any shortfall should be provided, in agreement with the borough, either:

1. Through a cash in lieu contribution to the borough's carbon offset fund, or
2. Off-site provided that an alternative proposal is identified, and delivery is certain.

D. Boroughs must establish and administer a carbon offset fund. Offset fund payments must be ring-fenced to implement projects that deliver carbon reductions. The operation of offset funds should be monitored and reported on annually.

E. Major development proposals should calculate and minimise carbon emissions from any other part of the development, including plant or equipment, that are not covered by Building Regulations, i.e. unregulated emissions.

F. Development proposals referable to the Mayor should calculate whole lifecycle carbon emissions through a nationally recognised Whole Life-Cycle Carbon Assessment and demonstrate actions taken to reduce life-cycle carbon emissions.

The Mayor may publish further planning guidance on sustainable design and construction157 and will continue to regularly update the guidance on preparing energy strategies for major development. Boroughs are encouraged to request energy strategies for other development proposals where appropriate. As a minimum, energy strategies should contain the following information:

A. A calculation of the energy demand and carbon emissions covered by Building Regulations and, separately, the energy demand and carbon emissions from any other part of the development, including plant or equipment, that are not covered by the Building Regulations (i.e. the unregulated emissions), at each stage of the energy hierarchy.

B. Proposals to reduce carbon emissions beyond Building Regulations through the energy efficient design of the site, buildings and services, whether it is categorised as a new build, a major refurbishment or a consequential improvement.

C. proposals to further reduce carbon emissions through the use of zero or low-emission decentralised energy where feasible, prioritising connection to district heating and cooling networks and utilising local secondary heat sources. (Development in Heat Network Priority Areas should follow the heating hierarchy in Policy SI 3 Energy infrastructure).

D. Proposals to further reduce carbon emissions by maximising opportunities to produce and use renewable energy on-site, utilising storage technologies where appropriate.

E. proposals to address air quality risks (see Policy SI 1 Improving air quality). Where an air quality assessment has been undertaken, this could be referenced instead.

F. the results of dynamic overheating modelling which should be undertaken in line with relevant Chartered Institution of Building Services Engineers (CIBSE) guidance, along with any mitigating actions (see Policy SI 4 Managing heat risk)

G. proposals for demand-side response, specifically through installation of smart meters, minimising peak energy demand and promoting short-term energy storage, as well as consideration of smart grids and local micro grids where feasible

H. a plan for monitoring and annual reporting of energy demand and carbon emissions post-construction for at least five years

I. proposals explaining how the site has been future-proofed to achieve zerocarbon on-site emissions by 2050

J. confirmation of offsetting arrangements, if required

K. a whole life-cycle carbon emissions assessment, and actions to reduce lifecycle carbon emissions (for development proposals referable to the Mayor)

L. analysis of the expected cost to occupants associated with the proposed energy strategy

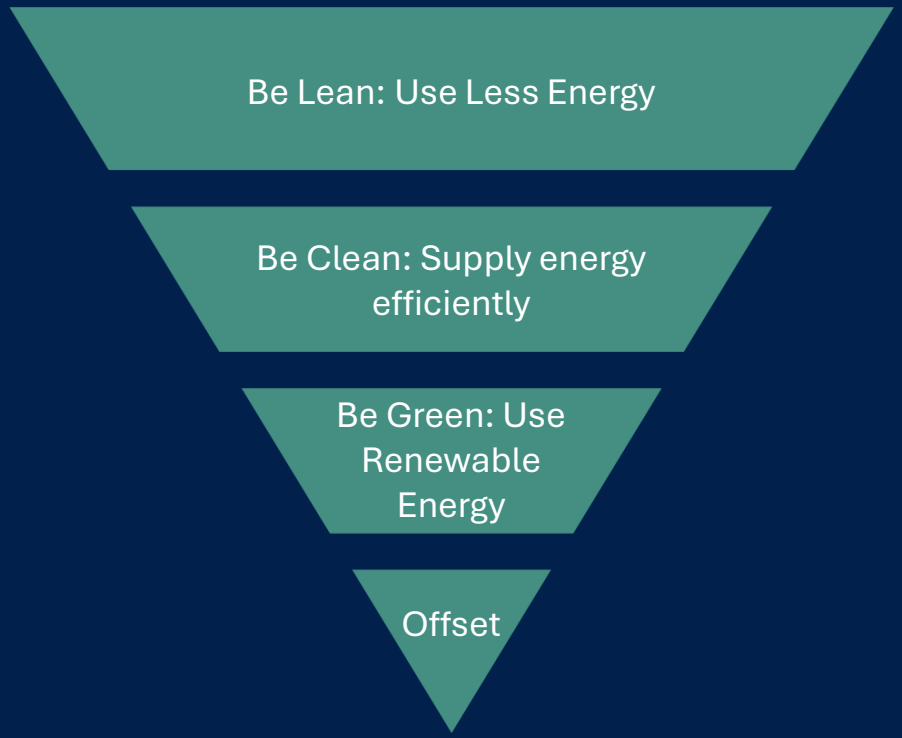
M. proposals that connect to or create new heat networks should include details of the design and specification criteria and standards for their systems as set out in Policy SI 3 Energy infrastructure.

# 3.0 Assessment Methodology

## 3.1 The Energy Hierarchy

The Energy Hierarchy is a classification of energy options, prioritised to assist in lowering energy consumption through passive and energy-efficient design principles.

**Figure 1**: The Energy Hierarchy




## 3.2 Energy Hierarchy Breakdown

**Be Lean. Use Less Energy**
Through passive design and energy efficiency, development should prioritise the lowering of energy consumption through the optimisation of the building fabric, and fixed service improvements

**Be Clean. Supply Energy Efficiently**
Exploit local energy sources [such as secondary heat] and supply energy efficiently and cleanly by connecting to district heating networks.

**Be Green. Use Renewable Energy**
Maximise Opportunities for renewable energy by producing, storing and using renewable energy on-site.

**Be Seen. Monitor and Verify Performance**
Consider monitoring and verification of energy performance to prove the design of the building is delivering on its promises for the first five years of occupation.

## 3.3 Definitions

**Definitions**

- **Regulated $CO_2$ emissions**: The CO2 emissions arising from energy used by fixed building services, as defined in Approved Document Part L of the Building Regulations. These include fixed systems for lighting, heating, hot water, air conditioning and mechanical ventilation.

- **Simplified Building Energy Model** (SBEM): A computer program that provides an analysis of a building's energy consumption. The purpose of the software is to produce consistent and reliable evaluations of energy use in non-residential buildings for Building Regulations compliance.

- **Standard Assessment Procedure** (SAP): A methodology for assessing and comparing the energy and environmental performance of dwellings. Its purpose is to provide accurate and reliable assessments of dwelling energy performances that are needed to underpin Building Regulations and other policy initiatives

- **Building Emissions Rate (BER) or Dwelling Emission Rate** (DER): The actual building/dwelling CO2 emission rate. It is expressed in terms of the mass of CO2 emitted per year per square metre of the total useful floor area of the building (kg/m2 /year). In order to comply with Part L of the Building Regulations, the BER/DER must be less than the TER

- **Target CO2 Emission Rate** (TER): The minimum energy performance requirement for a new dwelling/building. It is expressed in terms of the mass of CO2 emitted per year per square metre of the total useful floor area of the building (kg/m2 /year)

## 3.4 Limitations

**Limitations**

It is important to note that, at this stage, the detailed building specification for the proposed development is currently unavailable. This means that the specific information regarding the materials to be used, the exact construction methods, and the precise types of systems to be installed has not yet been finalized. Therefore, the proposed fabric elements—such as insulation types, glazing specifications, wall and roof constructions—and the fixed building services—including heating systems, ventilation mechanisms, air conditioning units, and lighting installations—mentioned within this energy statement are based on preliminary designs and the objectives that the proposed development is aiming to achieve.

These preliminary proposals are crafted to align with the anticipated performance standards and sustainability targets that are envisaged for the project. They are intended to meet or surpass the current building regulations and energy efficiency requirements. However, because the specific details are still under development, these proposals should be considered as indicative rather than definitive.

Once the proposed specification is confirmed by the applicant—meaning that all the details regarding materials, construction methods, and systems have been decided upon—a comprehensive review will be conducted. An updated set of Be Green compliance reports will then be provided. These updated reports will offer a detailed analysis of the building's expected energy performance based on the confirmed specifications. They will demonstrate how the finalized design complies with relevant environmental standards and energy efficiency criteria, providing assurance to all stakeholders that the development meets the necessary sustainability benchmarks.

# 4.0 Key Drivers

## 4.1 National Driver

**Approved Document Part L Volume 2 of the Building Regulations**

Part L of the Building Regulations is the mechanism by which the government is driving reductions in regulated $CO_2$ emissions and primary energy demand of new and existing buildings.

Part L sets out a series of rules surrounding the performance of the building envelope, and the fixed services used to condition the indoor environment. All buildings are required to meet or exceed the minimum allowable values of the building regulations to secure compliance.

## 4.2 Local Driver

**The London Plan**

The Mayor of London has declared a climate emergency and has set an ambition for London to be net zero-carbon. The London Plan contains a range of climate mitigation policies, including a requirement for major developments to comply with the net zero-carbon target set out in Policy SI 2 by following the energy hierarchy and maximising on-site carbon reductions. The target requires a minimum on-site carbon reduction to be achieved and allows for any carbon shortfall to be paid as a cash-in-lieu contribution into the relevant local authority's carbon offset fund. All major development proposals must be accompanied by a detailed energy assessment to demonstrate how the net zero-carbon target will be met.

## 4.3 Net Zero

**UK Government's Net Zero Strategy**
The UK Government aims to achieve net zero greenhouse gas emissions by 2050, requiring substantial carbon reductions in the construction sector.

**Key elements include:**

•**Energy Efficiency**: New buildings must incorporate high levels of insulation and airtightness to reduce energy consumption. This includes using advanced building materials and design techniques to minimize heat loss and gain.

•**Low-Carbon Heating**: Promotes the use of heat pumps and district heating systems. These technologies utilize renewable energy sources or waste heat to provide heating,.

•**Renewable Energy**: Encourages the integration of solar panels and other renewable energy systems.

•**Sustainable Construction**: Advocates for sustainable materials and modern construction methods to reduce waste. This involves using recycled or low-carbon materials.

•**Retrofitting**: Focuses on upgrading insulation and integrating renewable energy in existing buildings.

The strategy outlines a clear roadmap for the construction sector to support the UK's 2050 net zero target, ensuring compliance with future regulations and contributing to environmental sustainability.

# 5.0 Baseline Values

## 5.1 Establishing The Baseline

To accurately measure reductions in carbon emissions, primary energy, and energy demand, a baseline calculation must be completed to establish reference values for all metrics. These reference values are based on figures outlined in the National Calculation Methodology (NCM) Modelling Guide 2021 Edition. The baseline calculation was conducted using Design Builder, a software approved by Building Regulations. **Table 1** presents the reference values, which will be used to determine the reduction figures.

**Table 1**: Baseline Results [site-wide]

| $CO_2$ Emissions [$kg.CO_2/m^2/Yr$] | Primary Energy [$kWh/m^2/Yr$] |
|---|---|
| 42.30 | 436.22 |

The proposed development aims to reduce its regulated $CO_2$ emissions by 35% through the incorporation of renewable technologies. By the "Be Green" stage, the regulated $CO_2$ emissions will be reduced by at least 14.81 kg $CO_2/m^2/yr$. This will result in a final site-wide emission rate of 27.50 kg $CO_2/m^2/yr$.

## 5.2 Baseline Breakdown

**Figure 2**: Baseline Energy Consumption

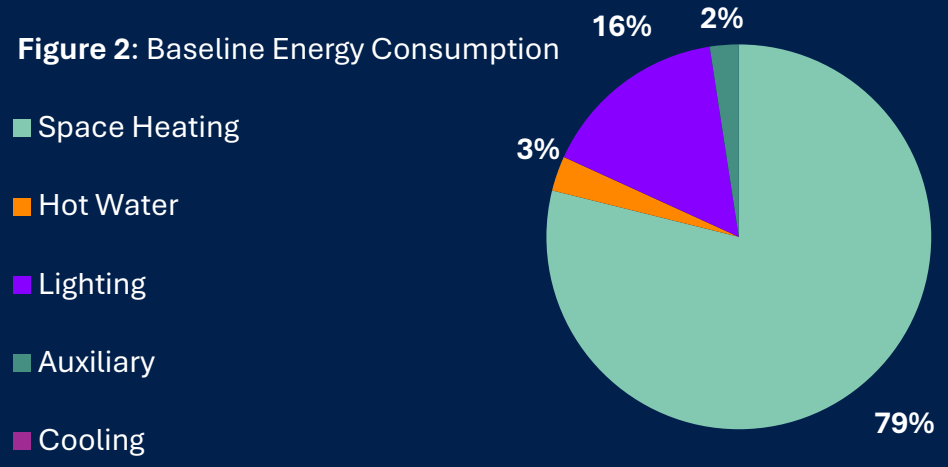
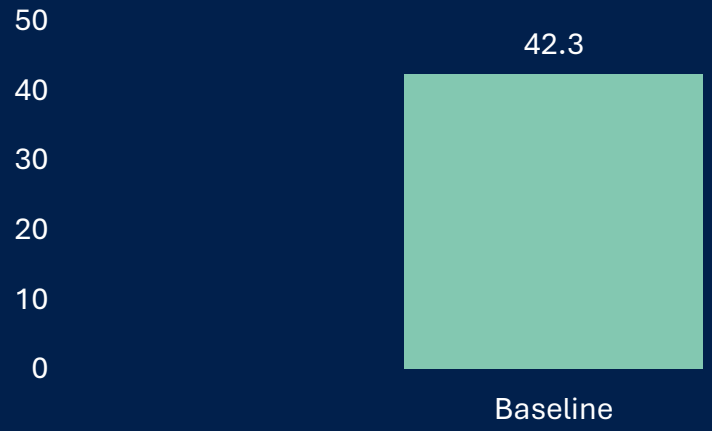



Figure 3: $CO_2$ Emissions at baseline [$kg.CO_2/m^2/Yr$]

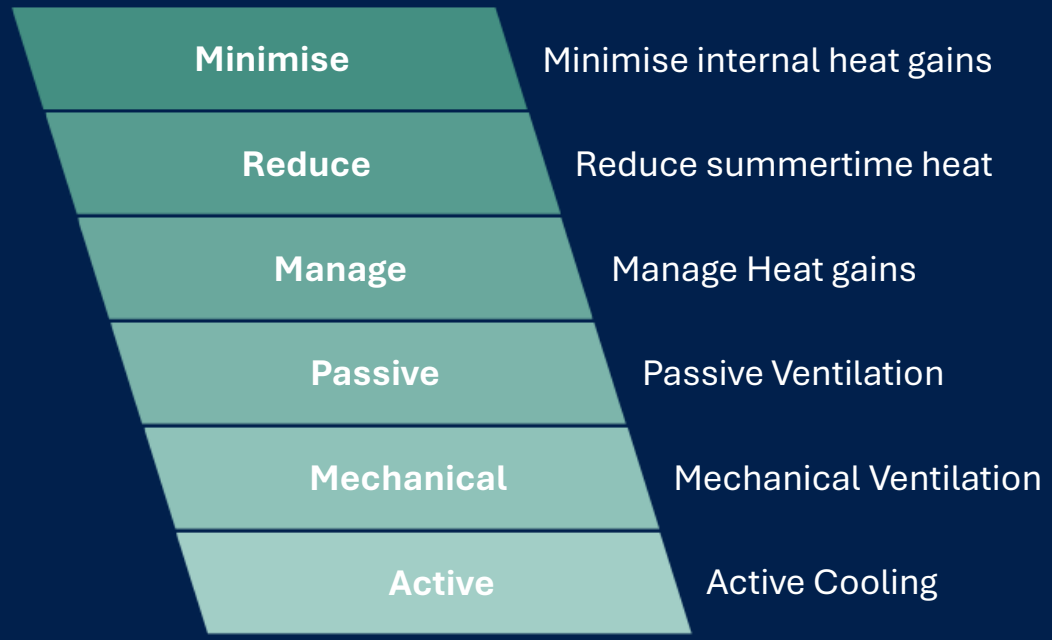


# 6.0 Cooling & Overheating

## 6.1 Cooling Hierarchy

Whilst the cooling hierarchy applies to major developments, it can still be applied to minor developments. See figure 4, the cooling hierarchy.

**Figure 4:** The Cooling Hierarchy




## 6.2 Mitigation Strategy

The following mitigation methods should be implemented in the proposed development pending comments from the officer:

**Minimising internal heat generation through energy efficient design**

- Use energy-efficient lighting [LED lights] with low heat output.
- Insulate hot water pipework and minimise dead legs to avoid standing heat loss from pipes.
- Employ energy-efficient auxiliary equipment with low heat output.

**Reducing the amount of heat entering the building in the summer**

- Optimised glazing ratio based on orientation and space use.
- Enhance solar shading for areas at particular risk of overheating.
- Use glazing with a suitable g-value to limit solar heat gains.
- Install trickle vents to enable passive ventilation.

# 7.0 Be Lean

## 7.1 Passive Design and Energy Efficiency Features

Passive design measures reduce the energy demand within buildings without consuming energy in the process. These are the most robust and effective methods for reducing $CO_2$ emissions, as their performance—such as that of wall insulation—is unlikely to deteriorate significantly over time or be altered by future property owners.

**Energy Efficient Features**

The proposed development will feature an efficient thermal envelope. Optimizing the building fabric will control heat losses and gains—for example, ensuring appropriate levels of glazing to manage winter heat loss and summer heat gain. Reducing the thermal transmittance of the building envelope where suitable will help lower both heating and cooling requirements, resulting in reduced energy consumption. Building services like lighting and auxiliary elements will be energy-efficient.

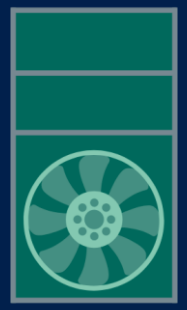
The table to the right details the fabric performance targets of the proposed development:

**Table 2**: Building Specification

| Building Element | Proposal |
|---|---|
| New External Walls [W/m$^2$.K] | 0.21* |
| Upgraded External Walls [W/m$^2$.K] | 0.26* |
| Upgraded Walls to Corridors [W/m$^2$.K] | 0.16* |
| Upgraded External Floor [W/m$^2$.K] | 0.16* |
| New & Upgraded Flat Roofs | 0.16* |
| Windows and Glazed Doors [W/m$^2$.K]<br>[G-Value] | 1.20* [Frame & Glass]<br>0.40 |
| Air Pressure Testing | 5.00 m$^3$/hr/m$^2$ at 50 Pa |
| Lighting Efficacy | 110 Lumens Per Watt |
| Ventilation Strategy | Natural |
| **Extraction Specific Fan Power** | |
| WCs | 0.30 W/l-s |
| Heating | Direct Electric |
| Hot Water | Instant hot water |

*Some U-values are based on early design and the values may fluctuate in future construction design concepts to adopt a lesser value than the limiting parameters.

## 7.2 Fixed Service Efficiency Measures



**Air Permeability**
Air testing is used to measure the volume of air that can escape through the building fabric. It is measured in $m^3/hr/m^2$ at 50 Pa and is performed at multiple stages during construction. The proposed development will undergo air pressure testing to reduce energy demand.

**Space Heating**
As part of the building services strategy, all spaces in the building are served by direct electric heating. This mitigates dependency on hydrocarbon-based systems.

**Hot Water**
To reduce hot water demand, all fixtures and appliances will be fitted with flow reducers to minimize the amount of water required for occupant activities. The overall water consumption must comply with Building Regulations Part G and the local policy on water usage.

**Exhaust and Ventilation**
An effective ventilation strategy improves the chances of achieving better indoor air quality. Local extract systems are also proposed for the wet rooms and kitchen. The specific fan power will be no higher than 0.30 W/l-s.

**Lighting**
All areas will be equipped with energy-efficient lighting fixtures throughout. We propose installing light-emitting diodes (LEDs) in all light fittings. The installed LEDs will need to achieve a luminous efficacy of at least 110 lumens per circuit watt.

**Cooling**
The passive design aims to keep the building cool in summertime by utilizing low g-value windows, potentially adding solar shading to at-risk orientations, high-performing building fabric, and LED lighting due to its low heat output. No active cooling has been specified.

## 7.3 Be Lean Results

The following is an appraisal of the anticipated energy requirements and resultant $CO_2$ emissions that could arise as a result of the proposed development, after the inclusion of the passive design and energy efficiency measures described.

The Table below outlines the anticipated annual energy requirements and associated $CO_2$ emissions for the proposed development by regulated end-use.

**Table 3**: Be Lean Results

| $CO_2$ Emissions [$kg.CO_2/m^2/Yr$] | Primary Energy [$kWh/m^2/Yr$] |
|---|---|
| 31.88 | 329.38 |

The proposed development aims to reduce its energy consumption and carbon emissions by optimizing the building fabric and implementing efficient fixed service features. This reduction is compared to the completed baseline calculation. Additionally, the table on the right illustrates the energy breakdown as percentages, along with the percentage reduction in regulated $CO_2$ emissions.

## 7.4 Be Lean Breakdown

**Figure 5**: Be Lean Energy Consumption

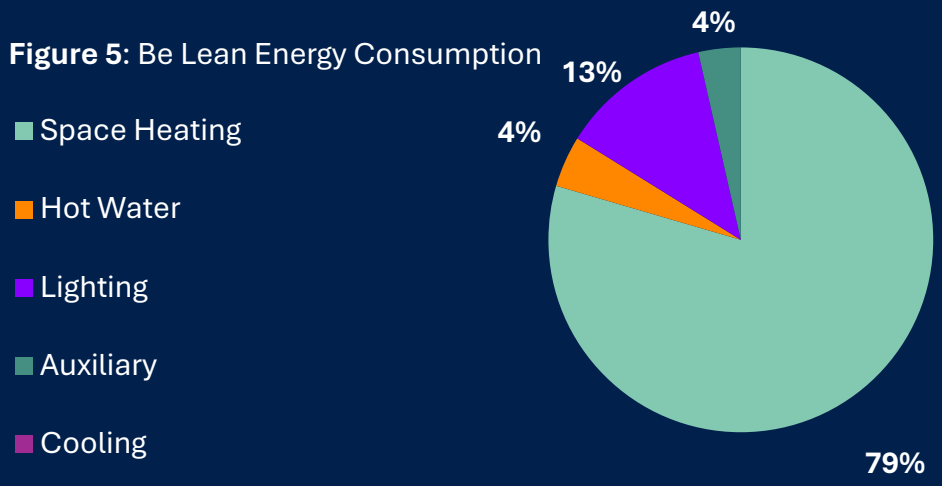
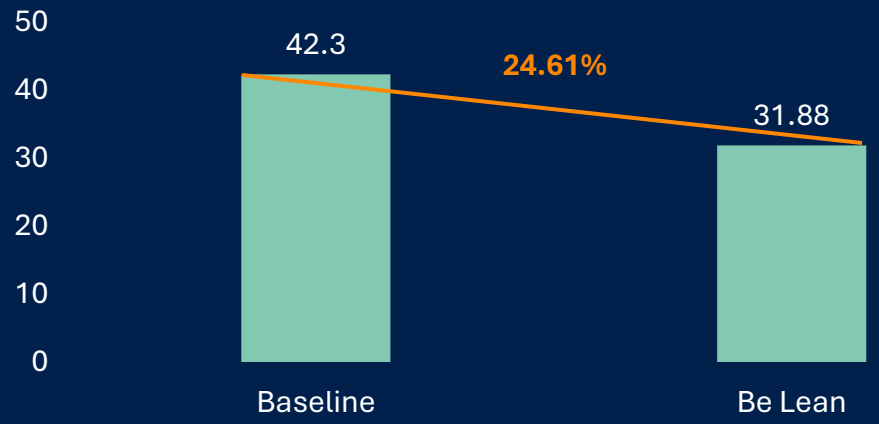



Figure 6: $CO_2$ Emissions at Be Lean [$kg.CO_2/m^2/Yr$]



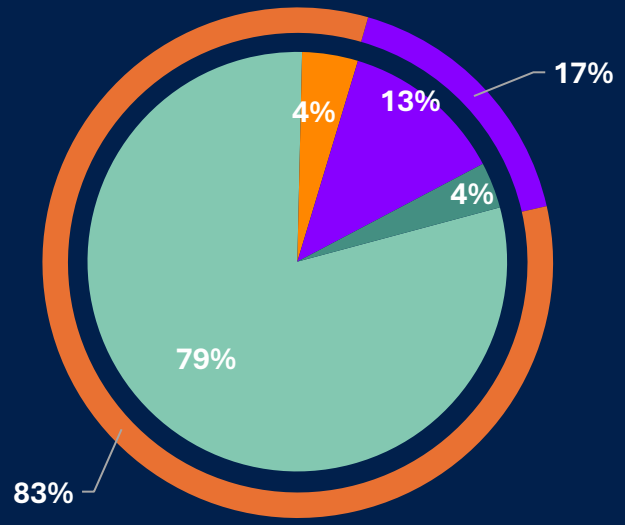
# 8.0 Be Clean

## 8.1 Supply Energy Efficiently

This stage of the energy hierarchy refers to the use of heat networks or on-site combined heat and power [CHP] to provide energy and reduce consumption from the national grid and gas networks, through the generation of electricity, heating, and cooling on-site.

**Development Demand**
The proposed development's anticipated non-thermal energy consumption has been calculated at 17% compared to 83% for thermal consumption.

**Figure 7:** Energy Consumption




## 8.2 Be Clean Summary

**Connecting to a Heat Network**

The proposed development will not be connected to a heat network because such infrastructure is currently unavailable in the immediate vicinity. While the only nearby heat network is the proposed Hillingdon Hospital, located approximately 1 km away, there are no existing networks to which the development can feasibly connect.

According to the London Plan Policy SI 3, developments should exploit local energy resources and supply energy efficiently to reduce $CO_2$ emissions by following the heating hierarchy. Heat networks offer significant benefits, including efficient energy distribution, reduced carbon emissions, and support for a net zero-carbon London through the use of secondary or waste heat sources.

They also provide system-level advantages like balancing the electricity grid and minimizing primary energy demand. However, without access to an existing or planned network within a practical distance, connecting is not feasible for this project. Therefore, the development will implement alternative heating solutions that align with policy objectives to minimise carbon emissions and supply energy cleanly and efficiently.

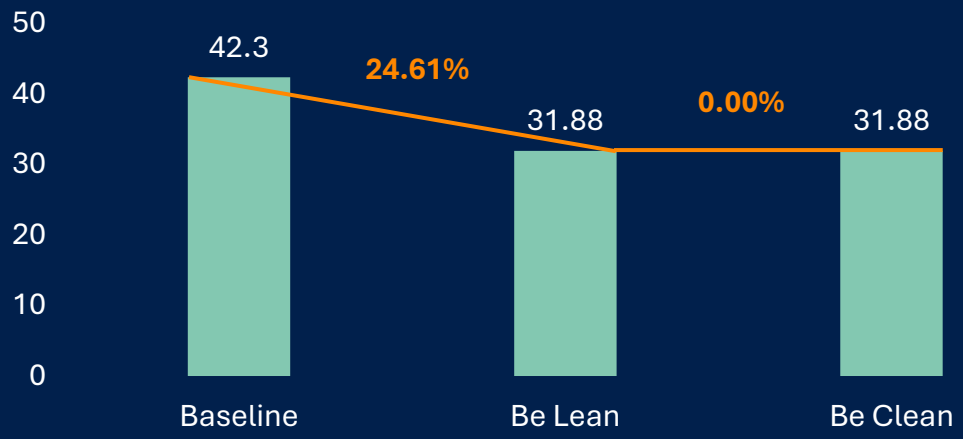
## 8.3 Be Clean Results

**Table 5:** Be Clean Results

| $CO_2$ Emissions [$kg.CO_2/m^2/Yr$] | Primary Energy [$kWh/m^2/Yr$] |
|---|---|
| 31.88 | 329.38 |

**The proposed development will not be connected to a heat network** because such infrastructure is currently unavailable in the area. While there are potential plans for a heat network, the project is still in extreme early stages and not operational. Therefore, alternative heating solutions will be implemented to meet the property's energy needs.

Figure 8: $CO_2$ Emissions at Be Clean [$kg.CO_2/m^2/Yr$]




## 8.4 What Are Heat Networks?

**What Are Heat Networks?**

Heat networks, also known as district heating systems, are centralized infrastructures that distribute thermal energy from a single source to multiple buildings via insulated pipes. These systems utilize a variety of energy sources—including combined heat and power plants, waste heat from industries, biomass boilers, and renewable energy like geothermal or solar thermal—to provide efficient space heating and hot water to residential, commercial, and industrial buildings.

**Why They Are Important for Cambridge's Future**

1. **Environmental Sustainability**: Heat networks can significantly reduce carbon emissions by using low-carbon and renewable energy sources. This aligns with Cambridge's goal of achieving net-zero emissions and combating climate change.
2. **Economic Benefits**: Centralized heating systems improve energy efficiency and offer economies of scale, potentially lowering operational costs and reducing energy bills for both residents and businesses over time.
3. **Energy Security and Resilience**: Diversifying energy sources enhances the city's resilience against supply disruptions and fluctuating fossil fuel prices, providing a more stable and reliable heating solution.

# 9.0 Be Green

## 9.1 Low and Zero Carbon Technology Assessment

The final step of the energy hierarchy explores the feasibility of low and zero-carbon [LZC] technologies to allow the production of renewable energy onsite to offer a further reduction in carbon emissions.

The following low and zero-carbon technologies have been discounted for the scheme:

**Solar Thermal**: These panels are like PV in that they harness energy from solar. This technology however converts solar into thermal energy that can offset the demand for hot water. However, it has been discounted in favour of PV.

**Wind Turbines**: Wind turbines convert kinetic energy into rotational energy which is transferred to the shaft of the generator, thereby producing electrical energy. Wind turbines have not been considered due to the building being situated in a dense urban area that provides inconsistent wind patterns.

**Ground Source Heat Pumps**: These systems work by extracting energy from the ground which provides a stable temperature across the year. For ground source heat pumps to be viable they require extensive below-groundworks to bury and install the system. Given the size of the proposed development and neighbouring mature trees, and properties, this technology has been discounted.

**Air Source Heat Pumps**: This system works by extracting energy from the air and condensing it to efficiently exchange the available heat energy to a refrigerant fluid with a low boiling temperature. Given the available plant room space in the building and proximity to buildings on either side of the proposed development, the technology has been deemed unfeasible.

**Photovoltaics**: Photovoltaics works by harnessing solar energy from the sun and converting it into electrical energy. It is used in buildings to offset electrical energy demands. Photovoltaics have been deemed feasible for the site and set as horizontal to not have any adverse impact on the character of the surrounding context. See below the suitability study:

- Photovoltaic System Location: Flat Roof Space
- Peak Output [kWp]: 6.00 kWp
- Array Orientation: South Facing
- Panel Angle: 30°
- Ventilation strategy: Moderately ventilated modules
- Shading: Little to no overshading [0-20%]

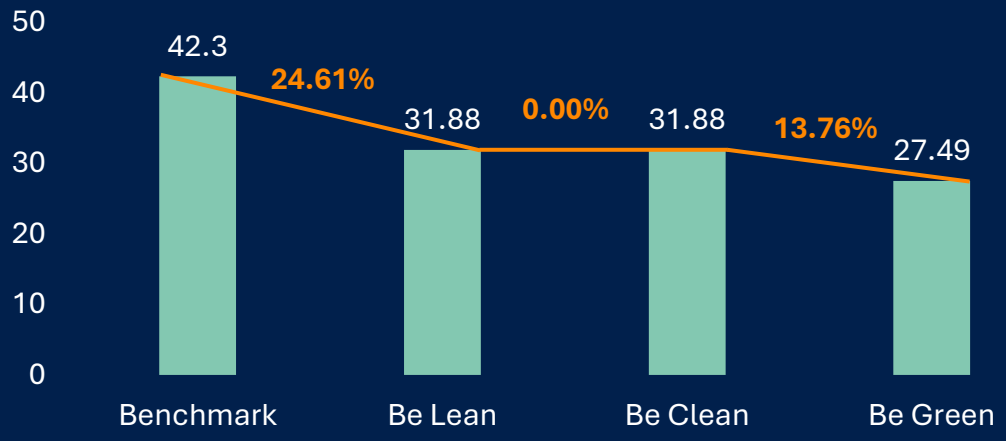
# 10.0 Statement Conclusion

## 9.2 Be Green Summary

Overall, with all three stages of the energy hierarchy combined, the $CO_2$ emissions of the building are reduced to 27.49 kg.$CO_2$/m$^2$Yr. This is a 35.00% reduction in $CO_2$ emissions from the baseline value of which over 24.00% is provided by improving the proposed building fabric.

See the figure below illustrating the $CO_2$ breakdown as incremental percentages from the preceding values:

**Figure 9**: $CO_2$ Emissions at Be Green [kg.$CO_2$/m$^2$/Yr]




## 10.1 The Energy Statement

This document has been prepared in support of the proposed development. The Energy Statement summarises the pertinent regulations and policies applicable to the Proposed Development and sets out how the Proposed Development addresses the relevant policy requirements.

The statement has been developed using the 'Be Lean', 'Be Clean' and 'Be Green' energy hierarchy which utilises a fabric-first approach to maximise the reduction in energy through passive design measures. This has then been supplemented with the inclusion of on-site renewable technology to provide a reduction in carbon emissions of 35%.

**Table 6**: Energy Statement Results

| Step | $CO_2$ Emissions | Reduction |
|---|---|---|
| Benchmark | 42.30 kg.$CO_2$/m$^2$/Yr | 0.00% |
| Be Lean | 31.88 kg.$CO_2$/m$^2$/Yr | 24.61% |
| Be Clean | 31.88 kg.$CO_2$/m$^2$/Yr | 0.00% |
| Be Green | 27.49 kg.$CO_2$/m$^2$/Yr | 13.76% |
| Combined | **35.01%** | |

# 11.0 Key Terms

## Building $CO_2$ Emission Rate (BER)

The Building $CO_2$ Emission Rate (BER) is a metric for assessing the carbon emissions of a building, typically measured in kilograms of $CO_2$ per square metre per year.

## Building Primary Energy Rate (BPER)

Primary energy in the context of SBEM refers to the total amount of energy used by a building, including both the energy consumed directly on site and the energy required to deliver and process the fuel before use.

## kWh

kWh, is a unit of energy representing the power consumption of one kilowatt over the period of one hour.

## U-value

The U-value is a measure of the rate at which heat transfers through a structure divided by the difference in temperature across that structure. It is expressed in watts per square metre per degree Celsius ($W/m^2°C$) and is used to assess the thermal efficiency of building materials.

## G-value

The G-value, also known as the solar gain coefficient, quantifies the solar radiation able to pass through a window or glazed unit. It is expressed as a fraction of incident solar radiation, indicating the effectiveness of glazing in admitting sunlight while blocking heat.

## Lumens per watt (Lumens/W)

Lumens per watt (Lumens/W) is a measure of luminous efficacy, representing the amount of light output (in lumens) produced for each watt of electrical power consumed. It indicates the energy efficiency of lighting products.

## HVAC

HVAC stands for Heating, Ventilation, and Air Conditioning, which are systems used in buildings to regulate indoor temperature, and airflow, and maintain air quality.

## SEER

SEER, is a measure of the efficiency of the conditioning system over a typical season, reflecting the amount of heating or cooling provided per unit of energy consumed. However, it's traditionally associated with cooling performance in various energy rating systems.

## EER

EER measures the cooling efficiency of air conditioners, comparing output in BTU to power input in watts.

## Specific Fan Power

Specific Fan Power (SFP) is a measure of fan efficiency, expressing the power used by a fan system (in watts) relative to the volume of air moved (in cubic metres per second).

# 12.0 Frequent Questions

## How is an SBEM calculation completed?

An SBEM calculation is completed by inputting building data—such as geometry, construction, lighting, heating, and ventilation—into the SBEM software to model energy use and calculate the Building Carbon Dioxide Emission Rate (BER) and Building Primary Energy Rating.

## What happens if a change occurs on-site?

If changes occur on-site, the SBEM calculations should be updated to reflect these modifications, ensuring the building still complies with the relevant energy performance requirements.

## Do I need to provide any more information?

As this is a design stage calculation, we will ask you to confirm and provide evidence of the actual materials and systems installed in the building before issuing any final documentation for sign-off

## When do I get the EPC Certification?

You receive the EPC (Energy Performance Certificate) after the building construction is complete and final SBEM calculations are verified, confirming that the building complies with energy performance regulations.

## Is an SBEM all I need to have calculated?

For a comprehensive approach to building performance and compliance, you might consider:

- TM52 Overheating Calculation: To assess the risk of overheating in buildings and ensure comfort for occupants.
- Air Pressure Testing: To measure the air permeability of a building and ensure it meets Part L of the Building Regulations for air leakage.

## What's next?

After Obtaining these reports the following will apply:

- Submit As-Designed Compliance Reports to building control
- Implementing any changes in the assessment
- Complete construction and update on any changes made
- Complete all necessary documentation for certification

# Terms & Conditions

Our commitment is to ensure the seamless progression of your project. We strive to present our terms and conditions in a manner that is not only straightforward and comprehensible but also equitable and transparent for all parties involved.

**Services Provided**: We shall perform energy and thermal modelling calculations to assist with planning, building regulations, energy performance, and asset management requirements.

**Milestones:** A project comprises two key milestones:

a. The 'As-Design Stage': Completion occurs before the project commencement, culminating in the provision of design reports.

b. The 'As-Built Stage': Completion occurs following project works, culminating in the provision of as-built reports

**Non-Payment:** Failure to remit payment will result in the withholding of project reports.

**Revisions:** The quoted price includes three revisions, each equivalent to one hour of additional work. Should revisions exceed this allotment or require significant recalculations, We reserve the right to charge additional fees.

**Pricing Structure:** Projects are quoted based on a fixed indicative structure, which may be adjusted for complexity or unique aspects of the project.

**Dispute Resolution:** Any complaints or feedback should initially be addressed directly with the company to enable a resolution to be reached that benefits both parties involved.

**Liability:** The company disclaims liability for any issues arising from the omission of information by the client that is critical to the services being expedited.

**Contract Duration:** The contractual agreement remains in effect from the time of payment until project completion.

**Modification of Terms:** Should these terms and conditions be altered while a contract is active, clients will be duly notified.

**Confidentiality and Data Use:** Client data will not be disclosed to third parties and will be retained by the company for potential use in future related work.

**Payment Terms:** Payment is required before the release of any reports, either at the design or as-built stage, unless an alternative agreement has been established.