Energy & Sustainability Statement

30 Tradescant Road

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Executive Summary

This energy statement is prepared to evaluate enhancements in energy performance resulting from the development at 30 Tradescant Road, situated within the London Borough of Lambeth.

This project involves creating two residential flats, each with three bedrooms, and renovating the existing structure.

An energy assessment based on design information has been conducted to identify effective ways to reduce CO2 emissions and energy demand.

Following the outlined thermal and mechanical upgrades, the energy strategy for the new residential units is expected to achieve a significant 64.30% reduction in CO2 emissions, aligning with the project's sustainability goals.

1. Introduction

This sustainability statement has been prepared for the development at 30 Tradescant Road within the London Borough of Lambeth. The project comprises the creation of two new residential flats, each containing three bedrooms.

This statement provides an overview of the sustainable design and construction measures that have been skilfully integrated into the project. These measures have been implemented to ensure alignment with the sustainability requirements set forth by the London Borough of Lambeth and the London Plan.

1.1 Assessment Approach

This report provides a concise summary of the efforts made to facilitate the formulation of an energy strategy for the new project, adhering to the energy hierarchy of 'Be Lean, Be Clean, Be Green, Be Seen.'

Standard Assessment Procedure for the Energy Rating of Dwellings (SAP) calculations have been diligently conducted for the four new residential units. These calculations serve to evaluate the influence of energy-efficient improvements through the hierarchy on energy demand and CO2 emissions. They also demonstrate the optimal solution for the development in meeting the necessary planning requirements.

2. Policy

This development consists of two dwelling units and does not exceed the requirement for classification as a major development. Therefore, the guidelines outlined in the London Plan

and those set forth by the London Borough of Lambeth pertaining to major developments are not relevant to this project.

3. Energy Strategy

An energy strategy was formulated, in adherence to the energy hierarchy 'Be Lean, Be Clean, Be Green,' and 'Be Seen.' Comprehensive energy calculations were conducted at each project stage, employing Building Regulations-approved and accredited software to assess the savings achieved through the integrated measures.

Figure 3.1 The Energy Hierarchy

The calculations encompassed energy consumption and carbon emissions and were executed using the accredited Standard Assessment Procedure for the Energy Rating of Dwellings (SAP 10.2), ensuring accuracy and compliance with established standards.

3.1 Energy Efficiency Targets

Table 3.1 below provides a breakdown of energy and carbon emissions for the new build flats, compared to the Part L target emission rate. These values have been calculated, utilizing the carbon factors specified in SAP 10.2 for precise assessment and compliance.

Energy (kWh/yr)					Electricity CO_2 (kg/yr)	Total Energy (kWh/yr)	Total CO_2 (kg/yr)
Heating	Hot Water	Pumps & Fans	Lighting	PV			
8,808	10,105	344	3,123	-3,003	108	19,377	4,079

Table 3.1 Target regulated energy demand and carbon emissions per energy source

3.2 Be Lean

In line with the 'Be Lean' approach, a series of passive design measures have been meticulously integrated during the pre-planning stage to curtail the initial energy demand of the project.

Solar Gain Control and Daylight

Solar gains, which harness the sun's radiation as a passive heating source, offer substantial benefits during colder months by effectively reducing internal heating requirements. However, during warmer months, controlling solar gains is essential to prevent overheating. This control is primarily achieved through deliberate glazing and shading design. This approach allows low-level winter sunlight to enter the building while restricting access to high-level summer sunlight.

The design of the glazing strategy places a strong emphasis on orientation and window size to optimize natural daylight while effectively managing excessive solar gains. Furthermore, glazing will feature low emissivity coatings, which serve to limit overheating without compromising light transmittance.

Building Fabric

An efficient thermal envelope is a pivotal element in reducing the demand for space heating and cooling, primarily by minimizing heat transmittance through thermal components. Low air permeability rates also play a crucial role in reducing energy demand for heating and cooling, as they limit the infiltration of external air into the building. Consequently, a 'fabric first' approach has been adopted, focusing on careful consideration and specification of the building fabric for the new units. This approach ensures that the building fabric either meets or surpasses the minimum requirements of the current Building Regulations. The refurbished flat, as outlined in Table 3.2, notably exceeds the minimum standards stipulated by Building Regulations.

Fabric Component	New Build Residential Specification	Residential Refurbishment Specification
External Walls	0.14 W/m^{2}K	0.14 W/m^{2}K
Roof	0.11 W/m^{2}K	0.11 W/m^{2}K
Exposed Floor	0.12 W/m^{2}K	0.12 W/m^{2}K
Windows	Triple Glazing 1.0 W/m^{2}K, G=0.4	Triple Glazing 1.0 W/m^{2}K, G=0.4
Rooflights	1.2 W/m^{2}K, G=0.4	1.2 W/m^{2}K, G=0.4
External Doors	1.2 W/m^{2}K	1.2 W/m^{2}K
Air Tightness	4m^3/m^2/h	4m^3/m^2/h
Thermal Bridging	Maximum Psi values are outlined in table 3.3 Requires further calculation at detailed design	Default

Table 3.2 Proposed Be Lean passive design measures

Thermal Bridge	Psi Value
Other lintels (including other steel lintels)	0.30
Sill	0.04
Jamb	0.04
Exposed Floor	0.32
Party floor between dwellings	0.07
Balcony between dwellings, wall insulation continuous	0.02
Flat roof without parapet	0.56
Corner (normal)	0.09
Corner (inverted)	-0.09
Party wall between dwellings	0.06

Table 3.3 Initial thermal bridge Psi values used in the model

Building Services

Services have been specified to maximize efficiency, reducing energy use. Table 3.4 outlines the proposed service strategy and energy efficiency measures for the development.

Services Component	Residential Specification
Heating distribution & water storage	Underfloor Heating 180L hot water cylinder Measured Loss: 2.2kwh\day
Cooling	-
Heating Controls	Time and temperature zone control
Ventilation	NIBE F730 Mechanical Extract Ventilation SFP 0.66
Lighting & Controls	100% Low Energy Lighting

Table 3.4 Proposed energy efficient design measure

3.3 Be Clean

In adherence to the 'Be Clean' approach, the incorporation of energy-efficient equipment, heat networks, and community heating has been considered.

District Energy Systems

The development site is situated beyond a 500-meter radius of any existing or proposed heat network. Although it falls within a Heat Network Priority Area, it's important to note that, given the minor scale of this development, the deployment of individual heat pumps has been

deemed the most practical solution. Additionally, policy requirements do not mandate the implementation of a future-proofed communal heating system in this context.

It's noteworthy that no additional data is presented in this section as there are no further opportunities for savings within the 'Be Clean' stage of the project.

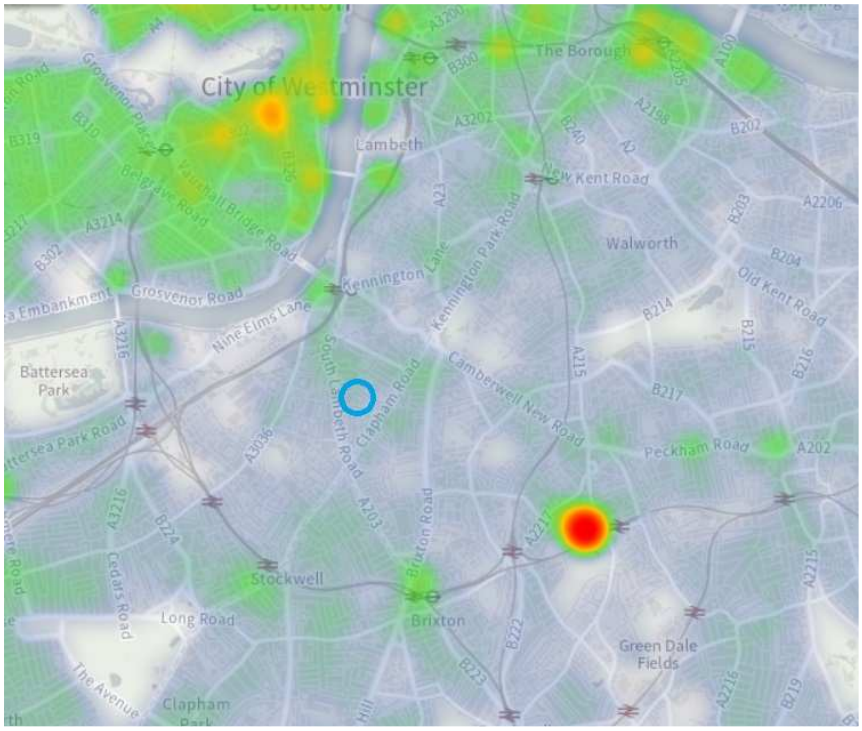


Figure 3.2 Heat Network Map

3.4 Be Green

In line with the 'Be Green' approach, the focus has been on integrating renewable systems into the project.

Renewable Systems

The selection process has led to the identification of an Air Source Heat Pump (ASHP) as the most suitable technology for this development. The NIBE Exhaust ASHP model has been specified for use, primarily to eliminate the necessity for external units. This decision takes into account considerations related to noise, aesthetics, and space, making it a practical and efficient choice for this context.

System	Residential Specification
ASHP	NIBE F370 Exhaust Air Heat Pump Wet System 55° SCOP 3.38

Table 3.5 Proposed LZC specifications

Furthermore, it's important to note that, in accordance with the provisions of the London Plan, on-site solar PV generation is not compulsory for minor developments. The inclusion of PV panels was considered but ultimately dismissed due to the presence of a rooftop amenity area and openable skylights on the available roof space.

3.5 Energy and Carbon Savings

Energy Use

A comprehensive assessment has been conducted to determine the breakdown of carbon and energy usage on the site. Table 3.6 offers a detailed breakdown of carbon and energy utilization, specifically in relation to regulated energy uses within the new build flats. These figures take into account the strategies outlined in this report, highlighting the expected energy and carbon savings.

Electricity (kWh/yr)						Electricity CO_2 (kg/yr)
Space Heat	Hot Water	Pumps & Fans	Lighting	PV	Total	
4,615	4,194	486	549	0	9,843	1,456

Table 3.6 Estimated regulated energy demand and carbon emissions per energy source

Carbon Savings

Table 3.7 presents a clear illustration of the percentage improvement achieved in reducing emissions compared to the notional baseline levels for the new build flats. This improvement pertains solely to regulated energy use and its associated emissions.

	CO_2 Emissions (T/yr)	CO_2 Savings (T/yr)	% Saving
Building Regulations 2021 Baseline	4.08		
Proposed Building	1.46	2.62	64.30%

Table 3.7 Regulated emissions improvements over Part L

The SAP calculations further validate that the proposed development surpasses the Fabric Energy Efficiency (TFEE), Primary Energy Rate (TPER), and Emission Rate (TER) targets. The specific performance in these areas is detailed in Table 3.8.

Dwelling Fabric Energy Efficiency Improvement Over the TFEE	Dwelling Primary Energy Rate over the TPER	Dwelling Emission Rate over the TER
0.70%	22.91%	64.30%

Table 3.8 performance of the proposed development over the TFEE, TPER and TER

3.6 Water Efficiency

To align with the water efficiency requirements established by the London Plan and the London Borough of Lambeth, the development will incorporate water fittings with specific flow rates, as outlined below, or equivalent options:

- Wash basin taps: 6.5 liters per minute
- Showers: 7.5 liters per minute
- Bath: 120 liters to overflow
- Dishwasher: 1.2 liters per place setting
- Washing machine: 9 liters per kilogram load
- WC (Toilet): 6/4-liter dual flush
- Kitchen taps: 6.5 liters per minute

Additionally, water meters will be installed to actively encourage residents to manage and minimize their water consumption, promoting responsible and sustainable water usage practices.

3.7 Materials

Sustainability and responsible resourcing are key considerations for the selection of materials in this project:

- **Timber:** The use of timber during both the construction phase and within the building will exclusively consist of wood sourced from legal origins. This includes wood certified by the Forest Stewardship Council (FSC) or its equivalent, ensuring ethical and sustainable timber practices.
- **Environmental Management:** In addition to timber, other materials sourced for the project will be chosen from manufacturers that implement robust environmental management systems, such as ISO 14001 or BES 6001. This approach underscores the commitment to sustainability throughout the supply chain.
- **Non-Toxic Materials:** The specification of non-toxic materials is a priority, aligning with European testing standards for low Volatile Organic Compound (VOC) content. This choice promotes indoor air quality and occupant well-being.
- **Life Cycle Assessment (LCA):** During the detailed design stage, a comprehensive Life Cycle Assessment will be conducted. This assessment will consider embodied

carbon, among other factors, in the selection of materials. Priority will be given to items with low life cycle costs, taking into account factors like site limitations, cost-effectiveness, and aesthetic preferences when making design choices. This holistic approach ensures that the materials used are not only sustainable but also economically viable for the project.

3.8 Waste Management and Construction

Efficient waste management practices are integral to this project's commitment to sustainability:

- **Waste Reduction:** Construction site waste will be meticulously managed to minimize the generation of waste. The waste hierarchy will be strictly adhered to, ensuring a conscientious approach to waste management.
- **Recycling Emphasis:** At least 85% of waste that does arise will be directed towards recycling through the engagement of an external waste contractor and adherence to the Civil Engineer’s Demolition Protocol. This approach aims to promote the reuse of materials on-site and, where this is not feasible, to salvage suitable materials for off-site use.
- **Household Waste Recycling:** To further bolster sustainability, household waste generated by residents will be directed towards recycling through the local authority collection scheme. Additionally, internal recycling bins will be conveniently installed within kitchen cupboards, encouraging and facilitating responsible recycling practices among residents.

3.9 Nature Conservation and Biodiversity

Given the site's existing building and limited vegetation, it is categorized as having low ecological value. Nevertheless, environmental considerations remain a priority:

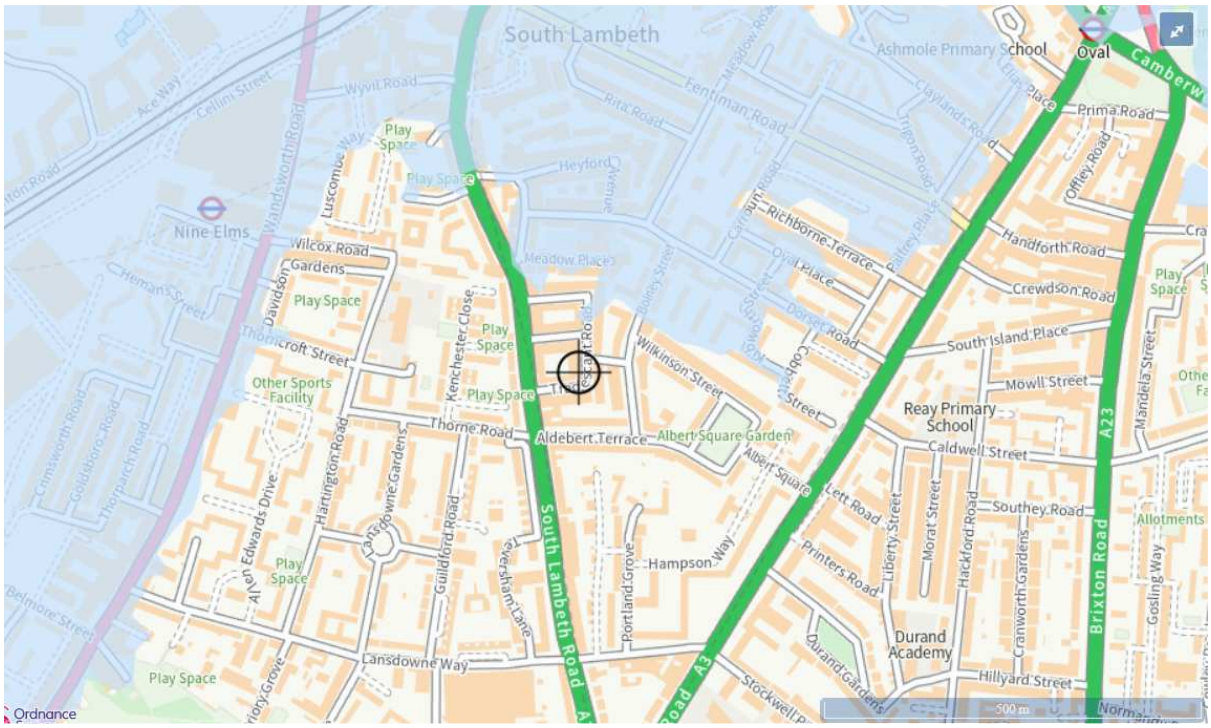
- **Construction Care:** During construction, precautions will be taken to safeguard any existing trees, and best practices will be followed to minimize any ecological impact. Work scheduling will be done thoughtfully to minimize disruptions to local ecosystems.
- **Landscape Enhancement:** As part of the development, extensive landscaping and native planting initiatives will be introduced. These efforts will be extended to maximize urban greening opportunities both at the front and rear of the proposed development.
- **Green Roof:** The project will feature a green roof adorned with native plant species and wildflowers. This green roof not only contributes to biodiversity but also aids in temperature regulation and stormwater management.

3.10 Climate Change Adaptation

In response to the challenges posed by increased temperatures and drought, the development incorporates a multifaceted strategy:

- **Solar Gain Control:** Windows will be equipped with low emissivity coatings to limit solar heat gain. Mandatory ventilation requirements will also be met to ensure adequate airflow as per AD Part F.

- **Cooling Hierarchy:** The strategy focuses on reducing heat entry into the building. The surrounding structures provide natural shading to the lower floors, curtailing solar gains.
- **Highly Efficient Features:** The development will include highly efficient triple glazing and well-insulated external walls, minimizing both solar heat gain and heat retention.
- **Internal Heat Minimization:** Measures to reduce internal heat generation include the mandatory use of highly efficient LED lighting. Additionally, pipework for heating will be fully insulated, curbing heat loss and preventing heat buildup in corridors and risers.
- **Heat Management:** The building design anticipates a high thermal mass, providing a buffering effect against extreme external temperatures.
- **Ventilation Options:** All occupied rooms will have operable windows, and the top-floor dwelling will feature operable skylights, enabling residents to ventilate their spaces. Mechanical ventilation, specifically an exhaust air source heat pump with integrated ventilation, will be employed to further ensure proper ventilation for occupants.
- **Active Cooling:** Recognizing the need for efficient cooling, the development has been designed to minimize overheating risks without the requirement for active cooling systems.
- **Flood Risk Management:** The site is situated in a low flood risk zone, and the proposed development will not contribute to an increase in impermeable surfaces, mitigating any associated risks.



3.11 Pollution Management

To address various pollution concerns, we have implemented measures to minimize environmental impact:

- **Air Quality:** During construction, stringent management practices will be employed to reduce dust pollution. This includes using dust sheets, covering skips, and dampening down where appropriate.
- **Noise:** All dwellings will adhere to Building Regulations Part E, ensuring high-quality sound insulation. To minimize noise transmission between the property and the surrounding area, all windows will be specified as high-efficiency triple glazing.
- **Light Pollution:** External lighting will be thoughtfully controlled, ensuring illumination only during non-daylight hours and when areas are in use. Given the residential nature of the proposed building, there will be no illuminated signage or uplighting incorporated. The development's urbanized location means it will have no significant impact on light pollution.

4 Conclusion

This sustainability statement pertains to the development at 30 Tradescant Road, which involves the conversion of the property into two flats.

This development adheres to the energy hierarchy, incorporating passive design measures and energy-efficient equipment. It features an efficient building fabric, including highly effective insulation, glazing, and Air Source Heat Pumps (ASHPs), resulting in substantial carbon savings of 64.30% beyond the Target Emissions Rate for the new build flats. This exceeds the 19% carbon reduction target set for the planning condition under Part L 2013. The project also includes strategies to minimize pollution and reduce water consumption. Importantly, this development aligns with the sustainability policies outlined by the London Borough of Lambeth and the London Plan, specifically tailored for minor developments.

It's important to note that the calculations in this report are based on the specifications provided by the design team. Any deviations from these specifications in terms of fabric or building services may necessitate further calculations.