10 Evelina Road,

Energy Statement for Planning

Job No: 3649

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Issue: 2

Contents

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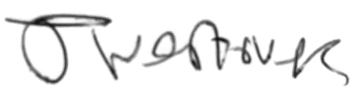

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1.0 Executive Summary

1.1 T16 Design has been appointed to produce this Energy Statement for the proposed development at 10 Evelina Road.

1.2 The report assesses the predicted energy performance and carbon dioxide emissions of the proposed development in the context of local and London-wide policy requirements and best practice methods.

1.3 The methodology used to demonstrate the effects of the proposed energy efficiency measures is the 3-stage Energy Hierarchy expounded by the London Plan, Policy 5.2A.

1.4 Emissions reductions are shown for the proposed scheme at each of these stages and the strategy underpinning them is detailed in the relevant sections of the report.

1.5 The overall effect of these measures is a reduction in CO_2 emissions of at least 35%.

2.0 Project Summary

2.1 The site is located at 10 Evelina Road, SE15 2DX.

2.2 The site is currently occupied by a three-storey construction, which consists of a garage at ground floor level and two floors of residential above. The upper two storeys are set back in relation to the street line.

2.3 The proposal is to demolish the existing building and to create a four-storey residential building, with two dwellings on each floor. This will consist of three two-bed flats, three one-bed flat and two studio flats.

2.4 The site location is shown below.

Site Location

3.0 Policy Requirements and Drivers

3.1 The relevant planning policy documents for this site, relating to energy are:

- The London Plan (2016)
- Southwark Council Core Strategy (2011)
- Sustainable Design and Construction SPG (2014)
- Housing Supplementary Planning Guidance (2016)

3.2 The London Plan is the overall strategic plan for London, setting out an integrated economic, environmental, transport and social framework for developments in London over the coming decades.

- Policy 5.2: Minimising carbon dioxide emissions;
- Policy 5.3: Sustainable Design and Construction;
- Policy 5.4: Retrofitting;
- Policy 5.4A: Electricity and gas supply;
- Policy 5.5: Decentralised energy networks;
- Policy 5.6: Decentralised energy in development proposals;
- Policy 5.7: Renewable energy;
- Policy 5.8: Innovative energy technologies,
- Policy 5.9: Overheating and cooling.

3.3 The primary driver for this report is Policy 5.2 - "Minimizing Carbon Dioxide Emissions".

3.4 This policy sets out the progressive tightening of emissions targets over the next 10 years or so, aligning with the governments stated aim of achieving zero-carbon development. As a part of this, residential developments are required to reduce emissions by at least 35% over Building Regulations. All remaining regulated emissions will need to be offset.

3.5 It is worth noting at this stage that the GLA (Greater London Authority) now requires applicants to use the latest SAP 10 emissions factors when estimating Co2 emissions performance against London Plan policies and has produced its own spreadsheet to make this calculation.

3.6 However, this is not appropriate for all schemes as the GLA tool currently only works for residential schemes which have communal heating systems. This is addressed in more detail in the 'Be Clean' section of this report.

3.7 Southwark Council's Core Strategy and Sustainable Design also set standards relating to these areas and requires the demonstration of high standards in resource efficiency and sustainable design.

3.8 In light of these policy requirements and through the developer and design team's commitment to reducing the impact of the development on the environment, this report sets out some of the measures that will be adopted to meet the policy targets.

4.0 Energy Strategy and Approach

4.1 The London Plan document titled "Energy Assessment Guidance", updated in October 2018, provides the parameters by which Energy Statements should be formulated and the approach to be adopted.

4.2 The targets and hierarchies to be used for both domestic and non-domestic developments are shown in the graphs below:

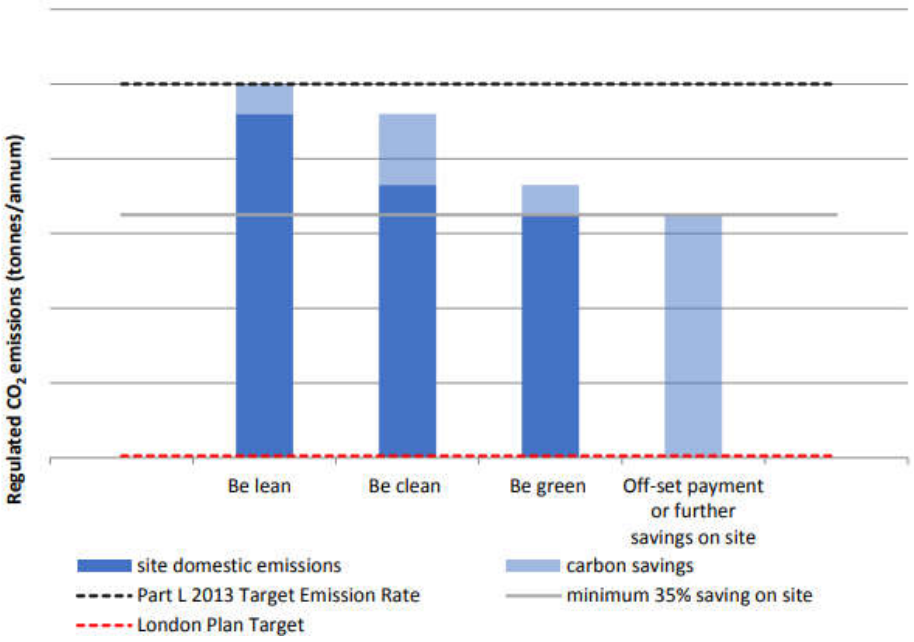


Figure 1- Non -Domestic Targets and Hierarchy

4.3 The three stages of the hierarchy are referred to as Be Lean (Use Less Energy), Be Clean (Supply Energy Efficiently) and Be Green (Use Renewable Energy).

4.4 Essentially, this means the first step is to improve insulation and air tightness levels and to reduce thermal bridging.

4.5 Stage 2 is to supply energy cleanly, meaning consideration of the use of heat pumps, district heating networks, biomass and Combined Heat and Power.

4.6 The third stage is the addition, where required and sensible, of renewable technology such as solar panels, wind and hydroelectric.

4.7 The first stage of this process is to establish the baseline emissions on which the reductions will be based.

4.8 This is done using SAP (Standard Assessment Procedure) for residential dwellings..

5.0 Baseline Emissions

5.1 The baseline emissions on which reduction figures are based are calculated using SAP for residential developments.
SAP calculates a notional building using the baseline Building Regulations parameters and represents the minimum allowable standard for the energy performance of the building to meet Part L1A of Building Regulations.

5.2 The parameters used are defined by the methodology and represent a target upon which improvements can be measured.

5.3 The TER figure is given in $kgCO_2/m^2/year$ (kilograms of CO_2 per square metre, per year).

5.4 Thus, to establish the actual baseline emissions per annum, it is necessary to multiply the TER by the floor area.

5.5 The baseline emissions are as follows:

Element	TER ($kgCO_2/m^2/year$)	Floor Area	Annual Emissions (kg) per Year
10 Evelina Road	17.4	428.4m^2	7,454

6.0 Be Lean Strategy

6.1 The next stage, once the baseline has been established, is to make improvements within the "Be Lean" category. This includes improving the U Values and the reduction of thermal bridging.

6.2 Gas boilers with an 90% efficiency have been assumed at this stage for the heating and hot water.

6.3 Accredited Construction Details have been assumed for the thermal bridging.

6.4 The U value improvements for each element, with the relevant Part L backstop are shown below.

6.5 The reduction in emissions achieved from these improvements can be seen in Section 9. A full list of the assumptions made in the calculations is provided in the Appendices.

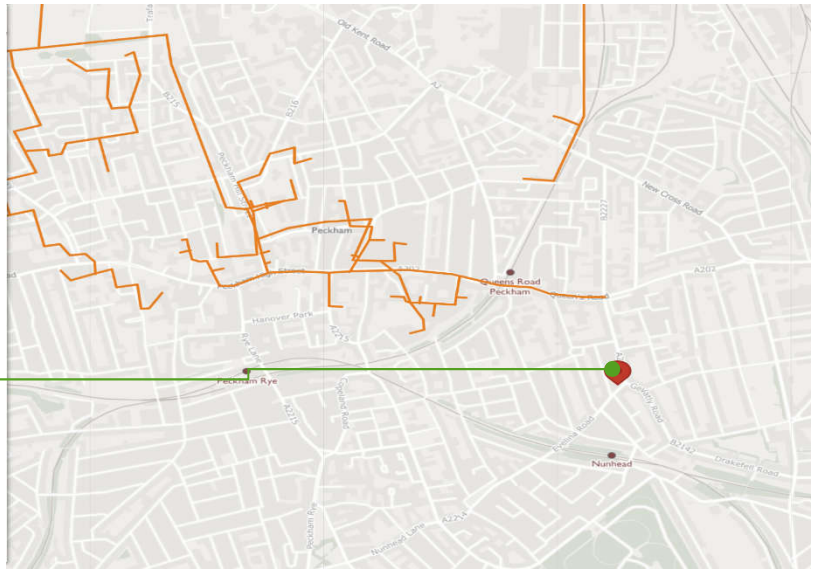
Element	Value Used (Residential)	Part L1A Backstop (residential)	Improvement (residential)
All Roofs	0.14 W/m²K	0.25 W/m²K	44%
Walls	0.18 W/m²K	0.35 W/m²K	49%
Ground Floors	0.13 W/m²K	0.25 W/m²	48%
Openings	1.4 W/m²K	2.0 m²K	30%
Air Permeability	5	10	50%

7.0 Be Clean Strategy

7.1 The Be Clean element of the hierarchy refers to supplying energy in a clean manner. This encompasses the use of energy efficient heating sources (such as heat pumps), decentralised energy and heat networks and the consideration of Combined Heat and Power.

7.2 The site is not near any existing decentralized energy or heating networks (as shown on the map below):

Site Location



7.3 Due to the relatively small scale of the proposal, CHP is also not a viable solution. London Plan guidance suggests that CHP is most suitable for large developments.

7.4 Ground Source Heat pumps are also unlikely to be a viable proposition due to the ground disturbance required in their installation.

7.5 Air Source Heat Pumps (ASHP) not are a suitable solution in this instance because they require space for plant, both internally and externally, which is not available here.

8.0 Be Green Strategy

8.1 The Be Green element of the hierarchy requires the consideration of renewable technologies to reduce emissions still further beyond the savings made at the Be Lean and Be Clean stages.

8.2 The technologies that are considered here are wind power and solar panels (photovoltaic (PV) or Solar Thermal).

8.3 Wind power is not suitable in a location such as this. Wind turbines tend to perform poorly in built-up areas.

8.4 Any wind that is received on the site would be too intermittent and turbulent to provide any meaningful reduction in emissions.

8.5 Solar panels (both PV and Solar Thermal) have been considered and both are suitable for the site. but as solar thermal systems have a much lower ability to reduce CO_2 for a given size of panel than PV, it is not the most suitable solution for this site.

8.6 For this reason, PV panels are considered the most suitable for the site.

8.7 To achieve the required reduction in emissions a total of **5.6 kWp** of PV will be required.

8.8 Using 0.25 kWp panels, this means that a total of **23** panels will be required.

8.9 The panels should be south-east facing where they are most effective.

9.0 Summary of Results

9.1 The table below give the percentage improvement in emissions at each stage of the hierarchy and the overall savings made over Part L of the Building Regulations.

9.2 This shows an improvement of 35.7% over Building Regulations, which meets the 35% requirement.

	Stage	Emissions kg/CO_2/year)	% Reduction
All Flats	Baseline (Part L compliance)	17.39	-
	Be Lean	16.79	2.3%
	Be Clean	16.79	2.3.%
	Be Green	11.18	35..7%

10.0 Conclusion

10.1 This report has been set out to demonstrate how the proposed development at 10 Evelina Road, will meet the policy requirement of achieving 35% reduction in emissions through the Be Lean, Be Clean, Be Green hierarchy.

10.2 In doing so, preliminary SAP calculations have been undertaken using the information available and sensible assumptions on construction and M&E parameters.

10.3 The baseline figures have been calculated and improvements made to the fabric and plant proposed for the scheme.

10.4 The measures proposed are detailed above but summarise as:

- PV Panels
- Significant fabric improvements
- Good air tightness.
- Accredited Construction Details

10.5 The results in Section 9 show that a 35.7% improvement is met, thus complying with the relevant policy requirement.

10.6 The total remaining emissions are 4.79 Tonnes CO2 / year,

10.7 The offset payment requires £60 per tonne over 30 years. Therefore, the total offset payment is (4.79x 60 x30) = **£8,622**.

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Appendix A – SAP assumptions

Block Compliance WorkSheet: 10 Evelina - Be Lean

User Details

Assessor Name:	Samuel Westover	**Stroma Number:**	STRO012073
Software Name:	Stroma FSAP	**Software Version:**	Version: 1.0.5.12

Calculation Details

Dwelling	DER	TER	DFEE	TFEE	TFA
Flat 1	16.45	17.25	32.2	37.8	54
Flat 2	17.35	18.07	42.2	48.4	70.5
Flat 3	15.2	15.85	29.6	34.1	61.2
Flat 4	15.08	15.71	26.5	29.8	52.5
Flat 5	15.62	16.25	31.4	36.2	61.2
Flat 6	15.38	16.01	27.8	31.3	52.5
Flat 7	20.51	20.88	41	45.3	39.2
Flat 8	20.92	21.3	41.5	45.7	37.3

Calculation Summary

Total Floor Area	428.40
Average TER	17.39
Average DER	16.76
Average DFEE	33.74
Average TFEE	38.38
Compliance	Pass
% Improvement DER|TER	3.62
% Improvement DFEE|TFEE	12.09

Block Compliance WorkSheet: 10 Evelina - Be Green

User Details

Assessor Name:	Samuel Westover	**Stroma Number:**	STRO012073
Software Name:	Stroma FSAP	**Software Version:**	Version: 1.0.5.12

Calculation Details

Dwelling	DER	TER	DFEE	TFEE	TFA
Flat 1	10.91	17.25	32.2	37.8	54
Flat 2	13.1	18.07	42.2	48.4	70.5
Flat 3	10.31	15.85	29.6	34.1	61.2
Flat 4	9.38	15.71	26.5	29.8	52.5
Flat 5	10.73	16.25	31.4	36.2	61.2
Flat 6	9.69	16.01	27.8	31.3	52.5
Flat 7	12.88	20.88	41	45.3	39.2
Flat 8	12.9	21.3	41.5	45.7	37.3

Calculation Summary

Total Floor Area	428.40
Average TER	17.39
Average DER	11.18
Average DFEE	33.74
Average TFEE	38.38
Compliance	Pass
% Improvement DER|TER	35.71
% Improvement DFEE|TFEE	12.09