Outline Energy Statement

D. Rose Planning LLP

3-7 Henry Road
Barnet
London
EN4 8BL

SRE

Version	Revision	Date	Author	Reviewer	Project Manager
1	A	12/04/2021	Owen Brookes	Iain Turrell	Owen Brookes

The figures within this report may be based on indicative modelling and an assumed specification outlined within the relevant sections. Therefore, this modelling may not represent the as built emission or energy use of the Proposed Development and further modelling may need to be undertaken at detailed design stage to confirm precise performance figures. Please contact SRE should you have any questions, or should you wish further modelling to be undertaken post planning.

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This Outline Energy Statement has been written to demonstrate the measures incorporated into the design of the residential development at 3-7 Henry Road, Barnet, which will deliver lower energy and water use and therefore lower carbon emissions than a Building Regulations compliant design.

The energy strategy has been developed by following the Energy Hierarchy of Lean, Clean, Green and Seen. This statement outlines the proposed energy performance of the dwelling, which will meet and exceed the relevant planning policy requirements for a minimum 19% improvement over a Building Regulations Part L1B Notional Building (baseline).

	CO_2 emissions (t/yr)	Improvement	Improvement over baseline
Baseline	1.52		
Lean	1.21	20.4%	20.4%
Clean	1.21	0%	20.4%
Green	1.21	0%	20.4%

Table 1 - Summary of regulated carbon dioxide savings

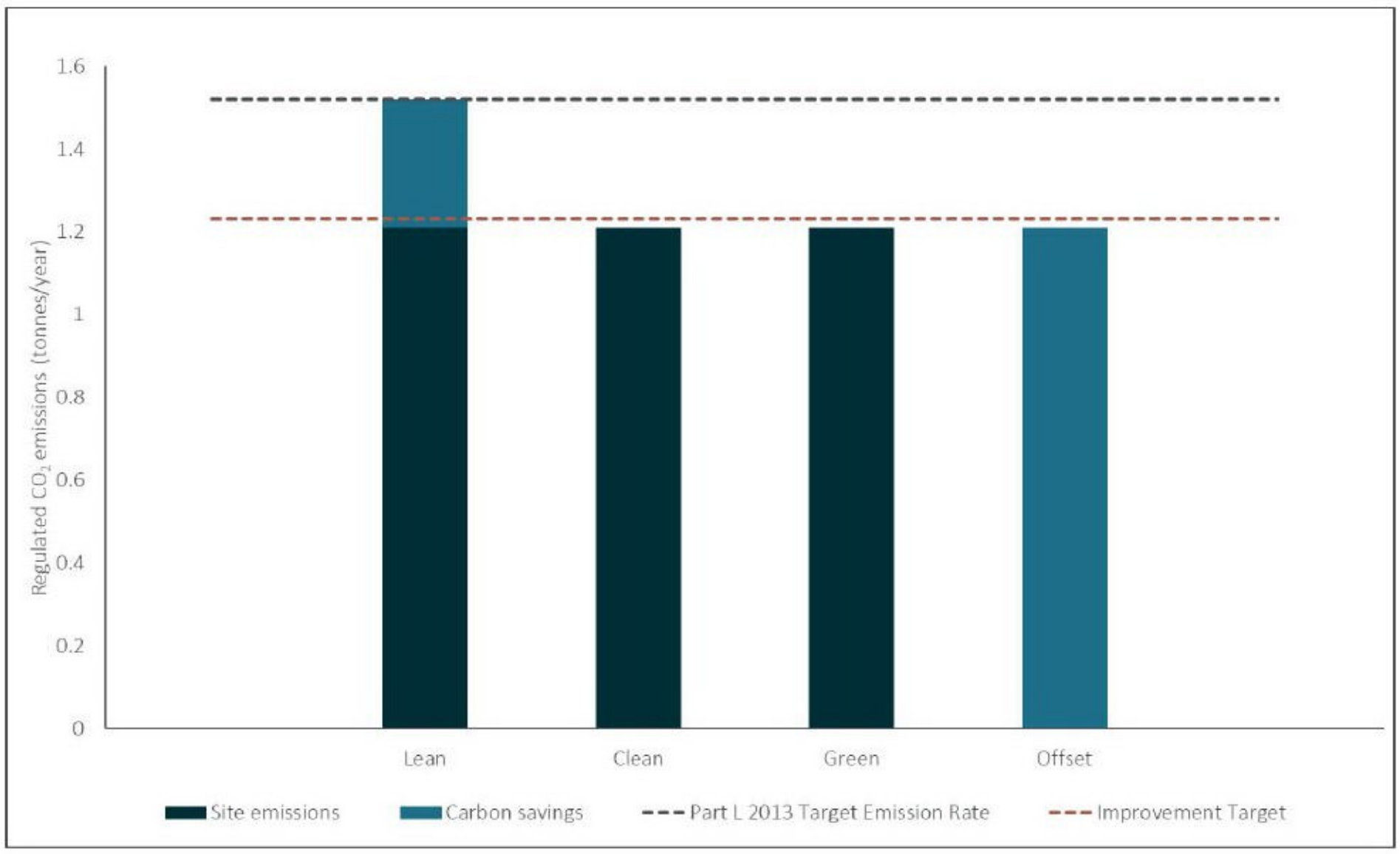


Figure 1 – Energy Hierarchy CO_2 Emissions Reduction Graph

Proposed Energy Strategy

- Enhanced building fabric
- Individual high efficiency gas boiler
- High efficiency doors and windows

Introduction

1.0 Introduction

This Summary Energy Statement has been written by SRE for D. Rose Planning LLP, on behalf of Brockley Estates Ltd, to demonstrate the measures incorporated into the design of the residential development at 3-7 Henry Road which will deliver lower energy and water use and associated lower carbon emissions than a Building Regulations Compliant design.

The statement compares the proposed building with the notional building energy requirements, taking into account energy efficiency measures and the suitability of low and zero carbon (LZC) technologies in order to address the relevant planning policy requirements.

The proposed development is a ground floor studio flat, located on 3-7 Henry Road, Barnet, which is to be created from the conversion of an existing storage area. A mixture of retained and new elements will be used as part of the redevelopment works.

Figure 2 – Proposed Site Elevation (Sub Rosa Architecture Ltd)

Planning Policy	Requirement
Barnet London Borough Council: Local Plan	<u>Policy CS13: Ensuring the efficient use of natural resources</u> We will seek to minimise Barnet's contribution to climate change and ensure that through the efficient use of natural resources the borough develops in a way which respects environmental limits and improves quality of life. • We will promote the highest environmental standards for development and through our SPDs on Sustainable Design and Construction and Green Infrastructure we will continue working to deliver exemplary levels of sustainability throughout Barnet in order to mitigate and adapt to the effects of a changing climate. • We will expect all development to be energy efficient and seek to minimise any wasted heat or power. • In line with London Plan Policy 5.2 – Minimising Carbon Dioxide Emissions we will expect major development in accordance with the Mayor's energy hierarchy to reduce carbon dioxide emissions beyond the 2010 Building Regulations. • We will maximise opportunities for implementing new district-wide networks supplied by decentralised energy (including renewable generation) in partnership with key stakeholders in areas of major mixed use growth including town centres. Where feasible we will expect all development to contribute to new and existing frameworks. • We will support solutions that minimise or avoid harm to a heritage asset's significance while delivering improved energy performance or generation. • We will make Barnet a water efficient borough and minimise the potential for fluvial and surface flooding by ensuring development does not cause harm to the water environment, water quality and drainage systems. Development should utilise Sustainable Urban Drainage Systems (SUDS) in order to reduce surface water run-off and ensure such run-off is managed as close to its source as possible subject to local geology and ground water levels. • We will improve air and noise quality by requiring Air Quality Assessments and Noise Impact Assessments from development in line with Barnet's SPD on Sustainable Design and Construction.

Table 2 - Summary of local planning policy requirements

Policy Interpretation

The Proposed Development is NOT deemed to be a major development so the energy, emissions and sustainability requirements can be taken from the Barnet Core Strategy rather than the London Plan. The following requirements must be met:

- All developments must be energy efficient and minimise waste heat and power.
- Where suitable, developments must generate renewable energy and contribute to district networks.
- Developments must be water efficient, minimise flood risk and ensure water quality is unaffected.

- Developments should not have a negative effect on air and noise quality and must perform Air Quality and Noise Impact Assessments.

The Proposed Development will obviously aspire to exceed the requirements as set out in the local planning documentation through the provision of sustainable, energy efficient development. The following requirements will be met in line with good industry practice:

- Energy and CO_2 emissions: Minimum 19% improvement over Building Regulations 2013 Standards.
- Internal Water Use: Maximum water use of 105 litres/person/day.

Energy

2.0 Energy

2.1 Method

The energy strategy design follows national policy guidance[1] and seeks to be:

Lean

minimise the overall environmental impact and energy use through energy efficiency measures

Clean

ensure that energy systems on-site (heat & power) are efficient & produce minimal CO_2 emissions

Green

Implement suitable technologies to provide renewable and emission free energy sources

Seen

incorporate monitoring through SMART metering and accessible displays

CO_2 Conversion Factors (Table 3) have been taken from Building Regulations 2013.

	CO_2 Conversion Factor ($kgCO_2/kWh$)
Electricity (mains)	0.519
Electricity (offset)	-0.519
Gas (mains)	0.216
Heating Oil	0.298
Wood Pellets	0.039
Woodchip	0.016

Table 3 - CO_2 conversion factors by energy source

The energy modelling for the Proposed Development has been calculated using SAP 2012 software in accordance with Building Regulations 2013 Part L1B. The notional building provides the energy baseline and is the exact size and shape of the Proposed Development but based on existing and notional U-values and heating specifications outlined in Approved Document L1B and the Domestic Building Services Compliance Guide.

	CO_2 emissions (t/yr)
Baseline	1.52

Table 4 - Baseline CO_2 emissions

Initial calculations have been undertaken within SAP 2012 for Building Regulations 2013 as this is the current Building Regulations for the UK.

[1]The draft London Plan https://www.london.gov.uk/what-we-do/planning/london-plan/new-london-plan

2.2 LEAN – Demand Reduction

The Lean scenario can achieve the following reduction in CO_2 emissions using passive and active design measures.

	CO_2 emissions (t/yr)	
	DER	Improvement
Baseline	1.52	
Lean	1.21	20.4%

Table 5 - Lean CO_2 emissions and improvement over Baseline

2.2.1 Passive Design Measures

Since the Proposed Development is part of an existing development the orientation of the dwelling is fixed so passive design measures such as solar gain techniques are limited. The choice of building materials used will be the primary passive design technique. The existing structure was previously a bin and cycle store for the rest of the flats in the development. The existing structure is already well insulated through all external elements, with the existing walls, floor and openings having low U-values. For this reason, it is assumed that the existing elements are not being upgraded and new elements installed will match the thermal performance of existing elements. Proposed U-values are given within Table 6.

Elements & U-Values	Notional Compliance	Proposed Residential
External Outside Wall - Existing	0.18	0.18
Sheltered External Wall (Corridor) - Existing	0.27	0.27
External Outside Wall - New	0.28	0.18
Sheltered External Wall (Corridor) - New	0.25	0.27
Ground Floor - Existing	0.16	0.16
Windows	1.60	1.40
External Door	1.80	1.10
Air Tightness @ 50 N/m²	15 ($m^3/hr/m^2$)	5 ($m^3/hr/m^2$)
Thermal Bridge	N/A	N/A

Table 6 - Fabric energy efficiencies

The overall building should have a medium thermal mass as construction is load-bearing masonry. A medium thermal mass will balance providing high energy efficiency and limiting overheating during the summer months.

2.2.2 Active Design Measures

The Proposed Development will utilise 100% low energy/LED lighting in excess of Building Regulation requirements.

Programmer, room thermostat and TRVs are the preferred heating controls at this stage as the size of the unit would not benefit from zoned heating.

Heating and hot water will be provided through a high efficiency combi gas boiler with auto ignition.

Openable windows will provide additional fresh air and purge ventilation where this is needed with standard mechanical extract from the bathroom and kitchen.

2.2.3 Cooling

The cooling hierarchy has been used to ensure that passive building design has been optimised to reduce the cooling load for the Proposed Development.

Cooling Hierarchy	Potential Design Measures
Minimising internal heat generation through energy efficient design	All primary pipework to be insulated, therefore low system losses. Low energy lighting throughout with minimal heat output. Combination boilers and point of use water heating removes potential gains from hot water storage.
Reducing the amount of heat entering the building in summer	Low E glass windows and internal blinds are to be provided to minimise solar gain. All non-party walls will be insulated.
Use of thermal mass and high ceilings to manage the heat within the building	Thermal mass is anticipated to be medium.
Passive Ventilation	Openable windows will be provided to all habitable rooms. Cross ventilation possible.
Mechanical Ventilation	Standard extract.

Table 7 - Design measures following the cooling hierarchy

Active cooling is not proposed.

Water Usage

Areas of the South East of England have been declared areas of 'serious water stress', particularly Greater London. Water is a vital resource and efficient usage should be encouraged in all new buildings. The Proposed Development aims to significantly reduce mains water use through a combination of efficiency measures, including the use of fittings with a low capacity or flow restrictors to reduce water use and PIR sensors linked to water shut-offs valves to reduce the chances of water waste.

Internal water use will be reduced in line with best practice to meet the requirement of <105 litres/person/day. The following specification gives an indicative method to achieving this requirement:

- W/Cs: 2.6/4 litre dual flush
- Basin taps: restricted to 3 litres/minute
- Kitchen taps: restricted to 5 litres/minute
- Baths: max. capacity of 170 litres to overflow (not allowing for displacement)
- Showers: restricted to 8 litres/minute

- Washing Machine: Max. 8.17 litres/kg dry load
- Dishwasher: Max. 1.25 litres/place setting

All restrictors installed will be permanent to secure the ongoing reduction in water use for the lifespan of the fittings installed.

2.3 CLEAN – Heating Infrastructure

The Proposed Development does not have sufficient heat demand to meet the requirements that would allow a communal heating system to operate to its maximum efficiency. Furthermore, the Proposed Development is not located within an area with an existing or proposed district heating system, nor is it located within a Heat Network Priority Area.

Therefore, the implementation of community or district-based heating system is not viable for the site.

2.4 GREEN – Low Carbon and Renewable Energy

The addition of 'Green' technologies can provide a significant reduction in CO_2 emissions and enable a Proposed Development to meet the threshold of a minimum 19% improvement over Baseline emissions. However, since the Lean scenario already achieves an improvement over Baseline emissions of more than 19%, improvement from the Green scenario is not required. As a result, renewable technologies such as photovoltaics (PV) will not be used.

2.5 SEEN – In-use monitoring

It is recommended that the Proposed Development will be supplied with a Smart Meter (where available from the utility supplier) along with associated internal energy displays. This will further improve energy efficiency by allowing the resident to observe their energy use in 'real time' and manage it more effectively.

2.6 Energy Conclusions

The Proposed Development will deliver energy demand reduction measures along with low and zero carbon technologies in order to reduce energy demand and associated CO_2 emissions resulting from the Proposed Development's operation.

The calculations undertaken demonstrate that the Proposed Development will successfully exceed Building Regulations Part L1B compliance by greater than the minimum 19% set out in the Core Strategy.

	CO_2 emissions (t/yr)	Improvement	Improvement over baseline
Baseline	1.52		
Lean	1.21	20.4%	20.4%
Clean	1.21	0%	20.4%
Green	1.21	0%	20.4%

Table 8 - Summary of CO_2 emissions, incremental improvement and improvement over Baseline

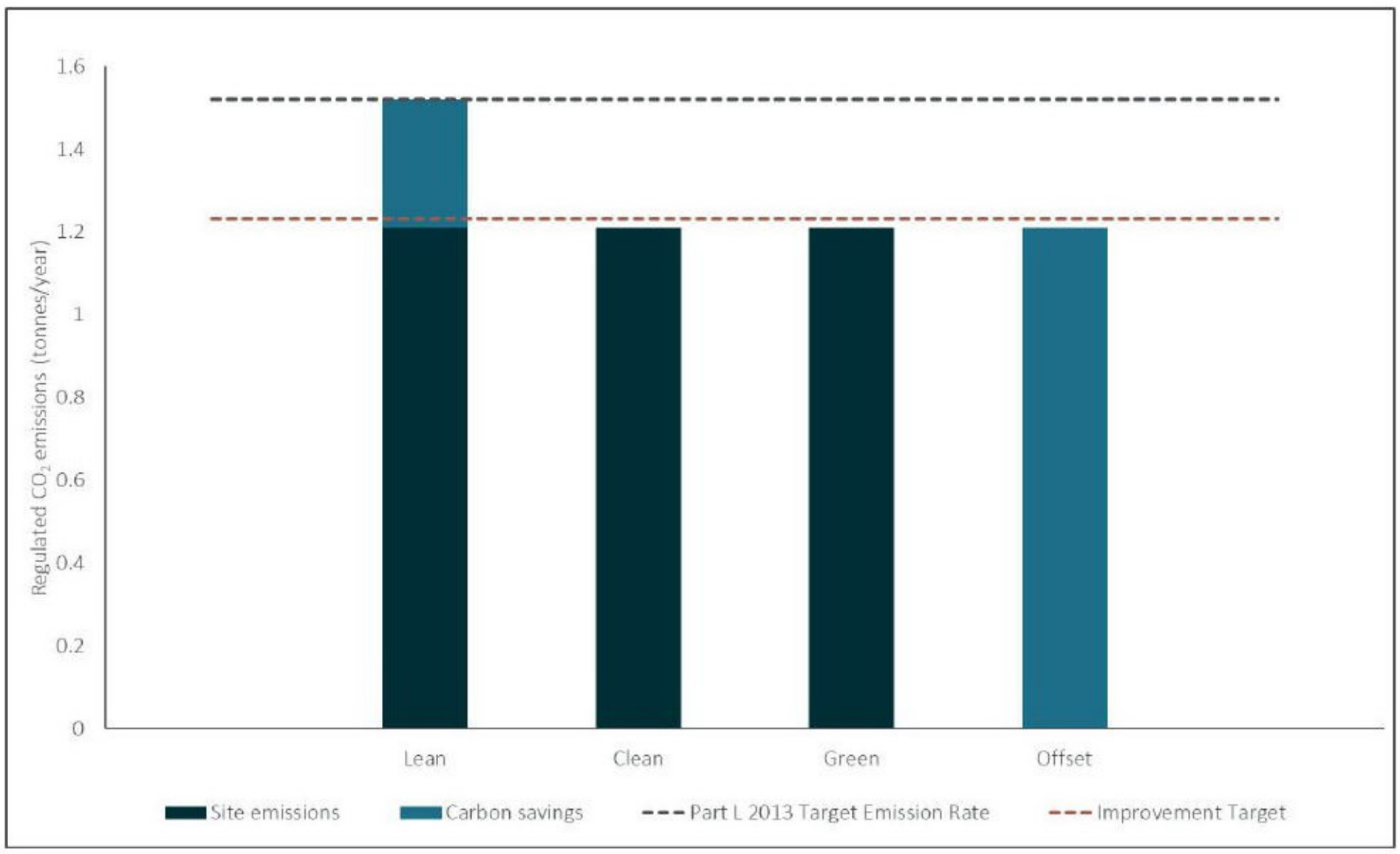


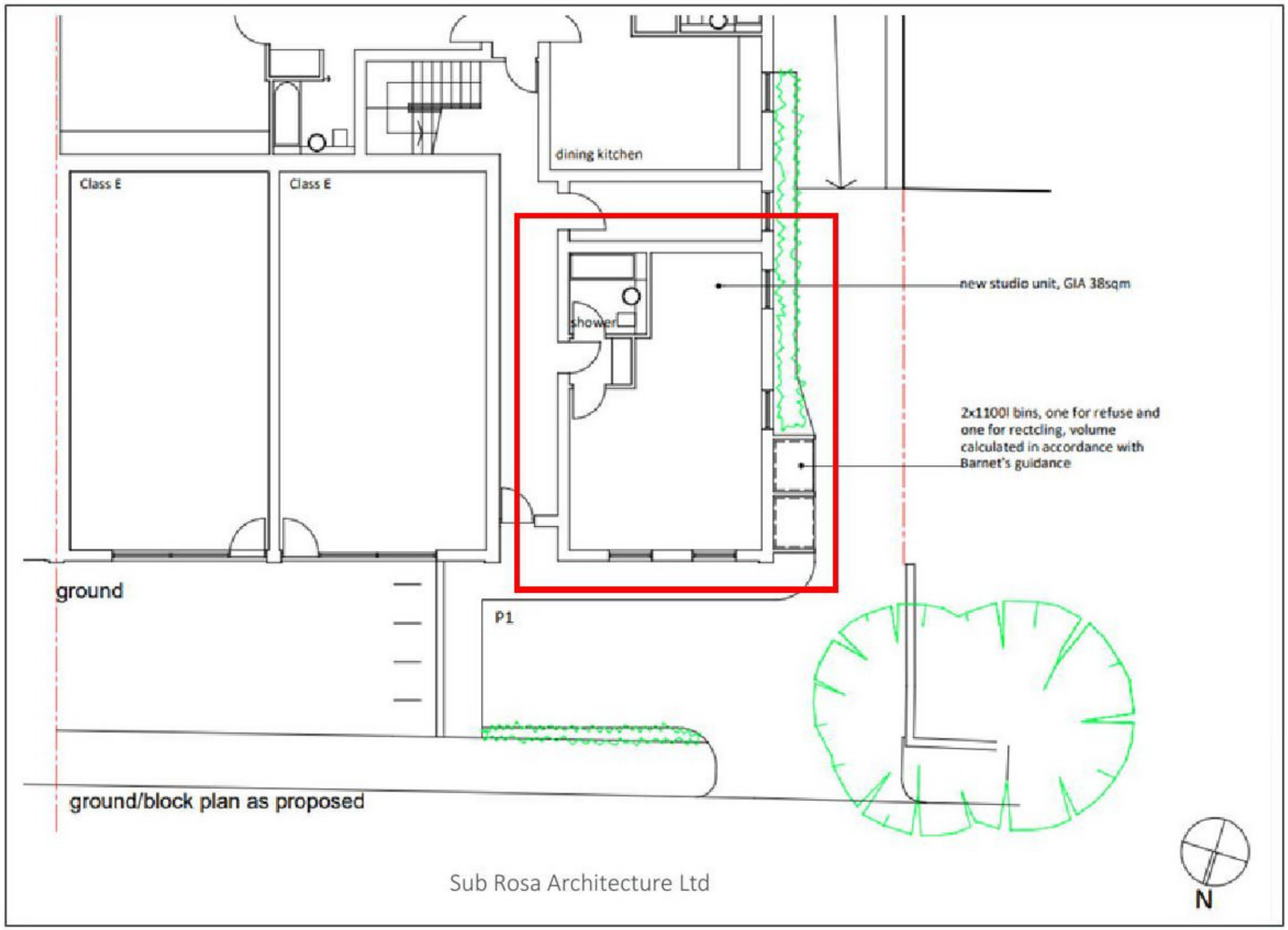
Figure 3 – Energy Hierarchy CO_2 Emissions Reduction Graph

In delivering the Lean energy strategy, the Proposed Development provides:

- Enhanced building fabric
- Individual high efficiency gas boiler
- High efficiency doors and windows

Appendices

Appendix A – Ground Floor/Site Plan



Sub Rosa Architecture Ltd

Appendix B – SAP Summary Sheet

3-7 Henry Road, Barnet

BRegs L1B 2013

Option	Units	External Wall	Sheltered Wall (Corridor)	Ground Floor	Roof	Windows	External Door	Primary Heating	Delayed Start Thermostat	Weather / load Compensator	Secondary Heating	HW Cylinder	Renewables (PV)	Renewables (Area)	Mechanical Ventilation	Air- Permeability	Proposed DER	Notional DER	% difference
Type	Plot No	U Value	U Value	U Value	U Value	U Value	U Value	Make	Y/N	Y/N	Y/N	(litres)	(kWp)	m^2	Type		kgCO2/mZ/yr	kgCO2/m2/yr	%
Ground floor studio	1	0.18	0.27	0.16	-	1.40	1.10	Vaillant ecoFIT pure 825 (combi)	N	N	N	-	N	-	Extract fans	5	32.54	40.88	20.40%

Flats assessed under block compliance

Element	Proposed U Values	Description
External Outside Wall SAP Wall Type 1	**0.18**	100mm Blockwork walls with 100mm XtraTherm CavityTherm Fullfill insulation in between. 10mm plaster dabs and 15mm Soundbloc plasterboard on inside of wall and 25mm Ceresit CT177 render on outside.
Sheltered External Wall (Corridor) SAP Wall Type 2	**0.27**	100mm Blockwork walls fulfilled with 100mm RWA45 insulation in between. 10mm plaster dabs and 15mm Soundbloc plasterboard on inside of wall and 25mm render on outside.
Ground Floor SAP Floor Type 1	**0.16**	150mm well compacted granular material, 150mm concrete slab, DPM, 150mm Celotex FR5000, vapour control layer, 65mm sand&cement screed, timber floor with underlay.
Windows	**1.40**	Double glazed low-e windows with whole window U-value of 1.40.
External Door	**1.10**	FD30 doors with whole door U-value of 1.10.
Construction Details (PSI values)	-	Default Thermal Bridging Assumed.
Primary heating	-	Vaillant ecoFIT pure 825 combi boiler with auto ignition.
Controls	-	Programmer, room thermostat and TRVs.
Heating Emitters	-	Radiators.
Water Heating	-	From primary heating.
Secondary Heating	**N**	-
Mechanical Ventilation	**Y**	Standard extract fans in bathrooms and kitchens.
Lighting	-	100% LE lighting.
Renewables	**N**	-
Overheating	**N**	-
Notes		

Sign Off of details	**Name**	(PP) M Maclean	[redacted]	12.04.2021	**On behalf of the contractor/client:**	**Name**		**Date**
	Sign					**Sign**		

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