



Energy Statement

Project: 51A and 51C Montagu Road, Edmonton, N18 2LX
Date: 26/10/2023

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1. Executive Summary

- The application involves the change of use of a dwelling to create 2x residential apartments.
- London Plan policy SI 2 requires a minimum of 35% improvement in CO₂ emissions compared against the baseline. Following the energy hierarchy; be lean, be clean, be green.
 - “Be lean” involves improvement to fabric and generates a total saving of 0.7 tonnes CO₂/year which is equivalent to 15%.
 - “Be clean” involves connection to a heat network. Unfortunately, there are no existing or planned networks within the vicinity of this site.
 - “Be green” involves incorporating renewable and or low carbon technologies. This development will utilise air source heat pump and a solar photovoltaic array. This step generated a saving of 3.3 tonnes CO₂/year which is equivalent to 71%.
- The cumulative savings was 4.0 tonnes CO₂/year which is equivalent to 85%.
- A cash in-lieu contribution of £1,997 will be required.

	Regulated residential carbon dioxide savings	
	Tonnes CO ₂ per annum	(%)
Be lean: savings from energy demand reduction	0.7	15%
Be clean: savings from heat network	0.0	0%
Be green: savings from renewable energy	3.3	71%
Cumulative on site savings	4.0	85%
Annual savings from off-set payment	0.7	-
	(Tonnes CO₂)	
Cumulative savings for off-set payment	21	-
Cash in-lieu contribution (£)	1,997	

*carbon price is based on GLA recommended price of £95 per tonne of carbon dioxide unless Local Planning Authority price is inputted in the 'Development

2. Introduction

This Energy Assessment has been prepared by Energytest ltd in support of the planning application at 51A and 51C Montagu Road, Edmonton, N18 2LX.

The application involves the change of use of single dwelling to create 2x residential units.

This statement provides an initial assessment of the CO₂ emissions of the dwelling using approved standard calculation methods (SAP 10 and the corresponding GLA Emission Reporting Spreadsheet), reviews the various option for renewable technologies and demonstrate how compliance with The London Plan will be met by implementing appropriate fabric efficiency measures and renewable and/or low energy technologies.

2.1 Development

The building was originally a single dwelling. This application involves the conversion to create 2x residential apartments.

Flat 51A is a one bedroom unit, set on the first floor, with a total floor area of ~63 sqm.

Flat 51C is a three bedroom unit, set over the ground and first floors, with a total floor area of ~87.5 sqm.

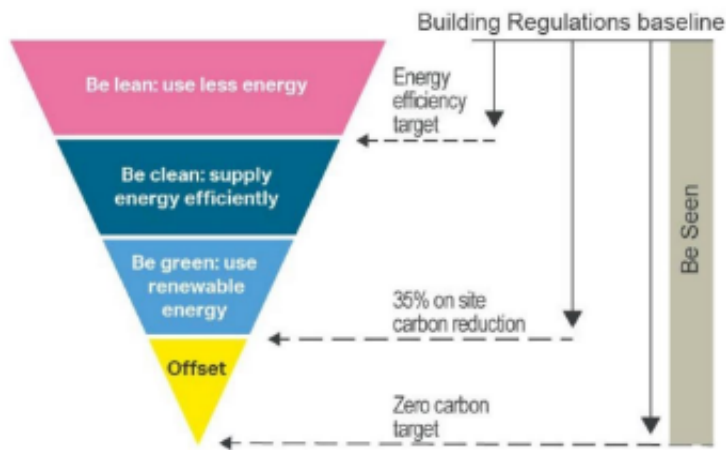
The existing building is believed to have solid masonry cavity construction with little to no insulation.

The fabric and services will be upgraded, exceeding the requirements of the 2021 version of Approved Document L1 of the Building Regulations. All new elements will be adequately insulated.

2.2 Planning Condition

- London Plan, policy SI 2, outlines how development is to make the fullest contribution to minimising carbon dioxide emissions in accordance with the following energy hierarchy:

Figure 1: The London Plan energy hierarchy



1. **Be lean:** use less energy and manage demand during operation through fabric and servicing improvements and the incorporation of flexibility measures
 2. **Be clean:** exploit local energy resources (such as secondary heat) and supply energy efficiently and cleanly by connecting to district heating networks
 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 through the Mayor's post construction monitoring platform.
- Demonstrate how the net zero-carbon target for major residential and non-residential development will be met, with at least a 35 per cent on-site carbon reduction beyond Part L 2021.

Building Type	Min. on-site improvement over Part L 2021 (per cent)	Benchmark improvement over Part L 2021 (per cent)
Residential	35 per cent	50 per cent +

- Provide the value of the offset payment to make up any shortfall, where required.
- Commit that energy efficiency measures alone will reduce CO₂ emissions for residential uses by 10 per cent below those of a development compliant with Part L 2021 of the Building Regulations.

3. Establishing CO₂ Emissions

3.1 Baseline CO₂ Emissions

The baseline CO₂ emissions for this development have been calculated as per the requirements of the GLA Energy Assessment Guidance June 2022, Section 6.

As this is a change of use project, the specification as per Table 12, has been used:

Table 12: Residential notional specification for existing buildings

Element	Unit	Specification ³
External Wall – cavity insulation	W/m ² K	0.55
External Wall – internal or external insulation	W/m ² K	0.30
Roof	W/m ² K	0.16
Floor	W/m ² K	0.25
Glazing	W/m ² K	1.60
Vision element	g-value	0.63
Air permeability	(m ³ /h m ² @ 50 Pa)	Default - determined by fabric element types
Thermal Bridging	W/m ² K	Default
HVAC type	-	As per final building specification
Heating and Hot Water	Per cent	Efficiencies to match the applicable notional values for existing dwellings (see section 6 of Approved Document L1)
Cooling (air-condition)	SEER	None
Lighting	Per cent	100 per cent low energy lighting with a minimum luminous efficacy of 75 light source lumens per circuit-watt.

The following baseline DERs were calculated:

Flat 1 34.93 kgCO₂/year/m²

Flat 2 28.82 kgCO₂/year/m²

3.2 Be Lean CO₂ Emissions

The first step of the energy hierarchy is to “Be lean: use less energy”. This involves improving the building fabric above and beyond the Building Regulations target to reduce the demand for energy in

each individual unit. The following U Values have been used within the SAP calculations (the actual specification is to be determined):

Element	U Value	Comments
Existing Ground Floor	0.25	<i>To be upgraded, if feasible</i>
Existing Walls	0.28	<i>Solid masonry construction, upgraded</i>
Party Walls	0.00	<i>Existing solid walls or new walls to be Fully filled with insulation - no heat loss flat to flat</i>
Joisted Roof	0.11	<i>400mm loft roll</i>
Glazing	1.40	<i>New glazing</i>
Air Tightness		<i>Though not mandatory for Building Regulations compliance, an air tightness test will be performed. The target is 5.00 for each flat</i>

The following DERs were calculated after the “be lean” step:

Flat 1 30.21 kgCO₂/year/m²

Flat 2 24.37 kgCO₂/year/m²

3.3 Be Clean CO₂ Emissions

The second step in The London Plan energy hierarchy is to “be clean: supply energy efficiently.” This involves connecting to a District Energy Network.

There are no existing or proposed District Energy Network within the vicinity of the site, as indicated by the London Heat Map. <https://maps.london.gov.uk/heatmap>

The developers will make every effort so to supply energy efficiently within this development:

- Space heating via air source heat pump (Mitsubishi Ecodan modelled for the purpose of this exercise)
- Efficient hot water cylinder with a low standing heat loss
- Ventilation via efficient intermittent extract fans
- Low energy lighting throughout
- Any appliances that are provided, will be efficient models

3.4 Be Green CO₂ Emissions

The final step in the London Plan energy hierarchy is to “be green: use renewable technology”.

After some feasibility study, the developers are going to implement the following renewable / low carbon technologies:

- **Air Source Heat Pump** for each apartment
 - This provides space heating and domestic hot water at high efficiencies (COP of 3.43), it is therefore considered to be a low carbon technology.
- **Solar Photovoltaic (PV) Panels**
 - These solar panels harness the sun's energy to produce electricity
 - A 4.00kWp array has been specified, with 2.00kWp assigned to each apartment for the purpose of this exercise.
 - How the PV will be distributed is unknown. I.e. if it will be distributed to each flat, or to a landlord supply won't affect the results. But it will ultimately affect the final EPC ratings.
 - The PV panels are currently specified to be South west facing at 30 degrees.

The following DERs were calculated after the “be green” step:

Flat 1	5.07 kgCO ₂ /year/m ²
Flat 2	4.34 kgCO ₂ /year/m ²

3.5. Table 3: Regulated Carbon Dioxide Savings From Each Stage Of The Energy Hierarchy For Domestic Buildings

The following savings were calculated at each stage of the energy hierarchy:

	Regulated domestic carbon dioxide savings	
	Total tonnesCO ₂ /year	%
Be Lean	0.7	15%
Be Clean	-	-
Be Green	3.3	71%
Cumulative Savings	4.0	85%
Annual savings from off-set payment	0.7	
	(Tonnes CO₂)	
Cumulative savings for off-set payment	21	-
Cast in-lieu contribution (£)	1,997	

4. Conclusion

With the specification as outlined in this report, this development will achieve a cumulative saving of 4.0 tonnes CO₂ / year which is equivalent to a 85% improvement on the baseline.

A cash in-lieu payment of £1,997 will be required.

Therefore the 35% improvement over the baseline emissions as stipulated by London Plan policy SI 2, **is satisfied.**

Any revisions of the aforementioned specification must be communicated with Energytest to ensure the planning condition will remain in perpetuity.

5. Appendix

5.1 Table 1: Carbon Dioxide Emissions after each stage of the Energy Hierarchy for residential buildings

	Carbon Dioxide Emissions for residential buildings (Tonnes CO ₂ per annum)	
	Regulated	Unregulated
Baseline: Part L 2021 of the Building Regulations Compliant Development	4.7	
After energy demand reduction (be lean)	4.0	
After heat network connection (be clean)	4.0	
After renewable energy (be green)	0.7	

5.2 Table 2: Regulated Carbon Dioxide savings from each stage of the Energy Hierarchy for residential buildings

	Regulated residential carbon dioxide savings	
	(Tonnes CO ₂ per annum)	(%)
Be lean: savings from energy demand reduction	0.7	15%
Be clean: savings from heat network	0.0	0%
Be green: savings from renewable energy	3.3	71%
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