

# Energy Statement

---

246-248 Kilburn High Road, London

Date: 20<sup>th</sup> May 2017

Revision: -

Prepared By: Nick Devlin

Project Ref: 1414/ND



## Table of Contents

1.0	Executive Summary.....	1
2.0	Introduction .....	2
2.1	Site Context.....	2
2.2	Planning Policy.....	3
3.0	Development Proposals .....	4
4.0	Development Specification.....	5
4.1	Be Lean - External Fabric Standards.....	5
4.2	Building Services Specification.....	5
5.0	Modelling Results.....	6
5.1	Be Lean & Be Clean .....	6
5.2	Be Green.....	7
5.3	Total Emissions Reduction .....	7
5.4	Unregulated Emissions .....	8
6.0	Zero Carbon Offset .....	10



## **1.0 Executive Summary**

The development proposal is for 27no. new flats in two blocks at the proposed development site at 246-248 Kilburn High Road

This report summarises the energy efficiency strategy proposed for the development. The energy efficiency strategy (Be Lean & Be Clean) incorporates high levels of insulation, airtightness, MVHR and triple glazing to achieve a 25.7% improvement compared to the Building Regulations minimum requirements.

The provision of a minimum of 13KWp of roof mounted PV panels will then provide the additional 20% reduction in regulated emissions from on-site renewables. The combined reductions from efficiency measures and on-site renewables will be a scheme with a 41% reduction in regulated carbon emissions compared to the statutory requirements of the Building Regulations.

## 2.0 Introduction

This report details the energy strategy for the proposed residential development at 246-248 Kilburn High Road. This report has been prepared in accordance with the requirements detailed in the GLA document 'Energy Planning: GLA guidance on preparing energy assessments' March 2016.

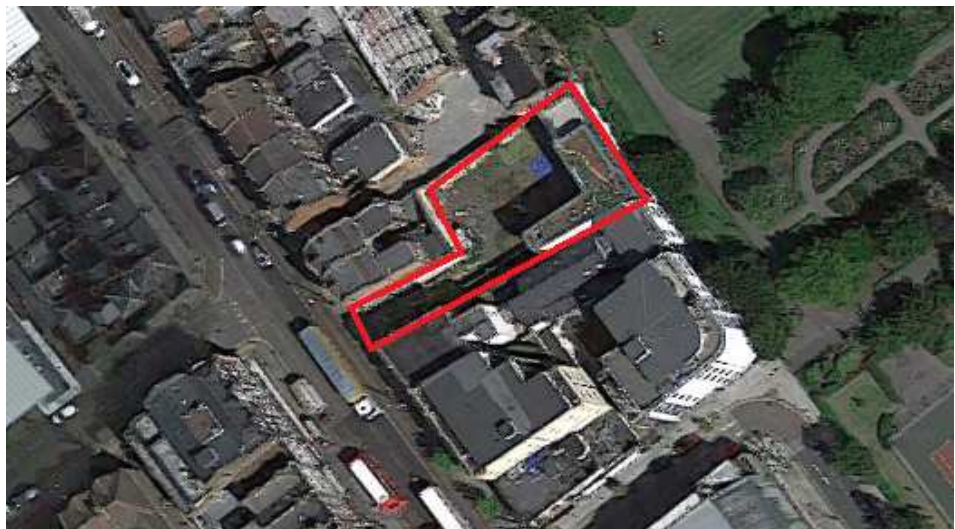
This analysis completed for this report is based on and should be read in conjunction the following information provided by Inside Out Architecture:

- P1512\_F-100-Location Plan
- P1512\_F-101 Existing Site Plan
- P1512\_F-103 Proposed Site Plan
- P1512\_F-200-205 Ground to fifth floor plans
- P1512\_F-300-301 Proposed Elevations
- P1512\_F-310-311 Proposed Site Elevations

## 2.1 Site Context

The site is situated between Kilburn High Road and Kilburn Grange Park as shown in Figure 1.

The main portion of the site is currently cleared as shown in Figure 1; with a three storey residential building occupying the Northern edge of the site as shown in Figure 2. The site is bounded and overlooked by a number of existing buildings, which are believed to be a mixture of residential and commercial premises.



*Figure 1: Aerial View of Site Location*

## 2.2 Planning Policy

The scheme is required to satisfy the energy performance standards defined in Chapter 5 of The London Plan 2016. This incorporates a number of policies that seek to mitigate climate change by reducing energy consumption and carbon dioxide emissions arising from new development.

This report specifically aims to address the following policies from The London Plan 2011:

### **Policy 5.2**

A minimum 35% per cent improvement over Part L1a 2013 requirements plus carbon offsetting for the balance to 100% via a cash in lieu payment.

### **Policy 5.3(c)**

Major development proposals should meet the minimum standards outlined in the Mayor's supplementary planning guidance and this should include measures to achieve other policies in this plan and the following sustainable design principles (in the context of this energy statement):

- Minimising carbon dioxide emissions across the site, including the building services (such as heating and cooling systems).
- Avoiding overheating and contributing to the urban heat island effect.

### **Policy 5.6(a)**

Development proposals should evaluate the feasibility of Combined Heat and Power (CHP) systems, and where a new CHP system is appropriate also examine opportunities to extend the system beyond the site boundary to adjacent sites.

### **Policy 5.6(b)**

Major development proposals should select energy systems in accordance with the following hierarchy:

- Connection to existing heating or cooling networks
- Site wide CHP
- Communal heating and cooling

### **Policy 5.7 Para 5.42**

There is a presumption that all major development proposals will seek to reduce carbon dioxide emissions by at least 20 per cent through the use of on-site renewable energy generation wherever feasible. There is no mandatory requirement to include renewable energy systems in new development.

### 3.0 Development Proposals

The development proposals are for 4no. 2 bed flats in Block A and 23no. flats in Block B. Figure 2 below illustrates the front elevation of Block A and the Grange Park elevation of Block B.

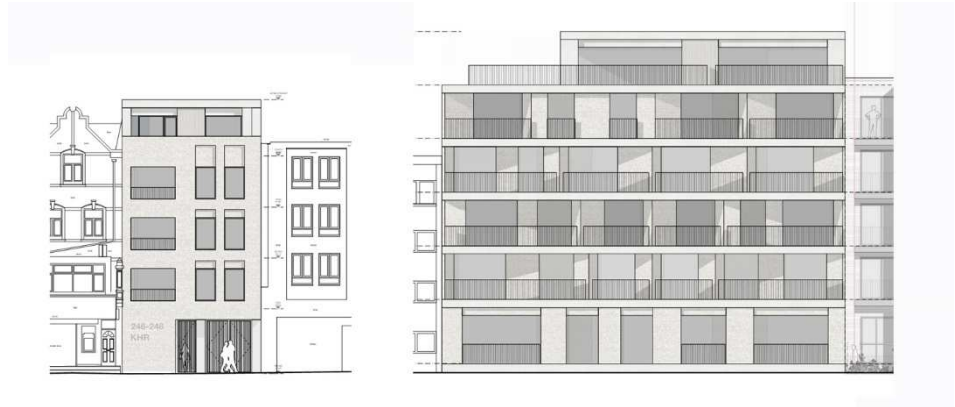


Figure 1: Block A (left) Block B (right)



## 4.0 Development Specification

### 4.1 Be Lean - External Fabric Standards

- External Walls:  $0.16\text{W/m}^2.\text{k}$
- Internal Separating Walls:  $0.20\text{W/m}^2.\text{k}$
- Party Walls:  $0.00\text{W/m}^2.\text{k}$
- Lower & Upper Ground Floors:  $0.13\text{W/m}^2.\text{k}$
- Roof:  $0.11\text{W/m}^2.\text{k}$
- Glazing:  $0.90\text{W/m}^2.\text{k}$  / g-value 0.64
- Airtightness:  $<2.00\text{m}^3/\text{m}^2@50\text{Pa}$
- Thermal Bridging:  $\leq 0.08\text{W/m}^2.\text{k}$  equivalent Y-value

### 4.2 Building Services Specification

The following building services have been adopted for the modelling exercise:

#### Base Case Scenario

- High efficiency combi-gas boilers with radiators
- DHW from boiler
- Trickle vents and intermittent extract fans
- 100% Low-energy lighting

#### Be Clean

- High efficiency communal boiler with LTHW
- Heat recovery ventilation
- 100% Low-energy lighting

Policy 5.6(b): Major development proposals should select energy systems in accordance with the following hierarchy:

- Connection to existing heating or cooling networks
- Site wide CHP
- Communal heating and cooling

There are currently no district heat networks within a suitable connection distance of the development proposals and has been discounted at this stage. Therefore the proposal is to integrate a communal boiler located in the external plant room at ground floor level. LTHW shall be distributed to Hydraulic Interface Units (HIU) in each dwelling to supply space heating and hot water. A low temperature system operating with a 35-45 °C return temperature is recommended to help minimise summertime overheating risk issues.

## 5.0 Modelling Results

### 5.1 Be Lean & Be Clean

Table 1 below summarises the results from the Part L1a modelling. The baseline regulated emissions for the scheme taken from the Target Emission Rate (TER) calculations are predicted to be in the region of 35.7 metric tonnes (35,700 KgCO<sub>2</sub>/yr).

The combination of the proposed enhanced fabric and building services specification (Be Lean & Be Clean) are predicted to result in annual regulated emissions of 26.5 tonnes, a reduction of 25.7%.

Flat	TFA m <sup>2</sup>	TER KgCO <sub>2</sub> .yr/m <sup>2</sup>	DER KgCO <sub>2</sub> .yr/m <sup>2</sup>	TER x TFA KgCO <sub>2</sub> /yr	DER x TFA KgCO <sub>2</sub> /yr
A1	72.5	18.34	14.79	1330	1072
A2	72.5	15.53	13.17	1126	955
A3	72.5	15.75	13.34	1142	967
A4	62.5	21.34	15.13	1333	946
B1	119.2	18.30	14.27	2182	1701
B2	74.8	21.77	17.01	1629	1273
B3	96.1	19.97	15.55	1919	1494
B4	50.2	19.95	14.68	1001	737
B5	48.0	21.75	15.63	1044	750
B6	53.9	18.08	12.77	974	688
B7	53.9	18.08	12.77	974	688
B8	48.2	21.24	14.73	1024	710
B9	49.0	19.39	13.86	950	679
B10	104.0	15.29	10.84	1591	1127
B11	60.9	17.10	12.13	1041	738
B12	60.9	17.10	12.13	1041	738
B13	103.2	15.45	10.93	1595	1129
B14	86.6	16.22	11.61	1403	1005
B15	79.0	15.71	11.28	1240	891
B16	84.2	15.25	11.00	1284	926
B17	80.7	16.88	12.10	1362	976
B18	86.6	16.22	11.61	1403	1005
B19	79.2	15.34	10.84	1215	858
B20	78.7	18.77	14.22	1477	1119
B21	45.5	19.72	14.53	897	661
B22	94.6	17.60	13.12	1665	1242
B23	123.7	15.29	11.92	1891	1474
Total	2040.9			35732	26550
Average TER / DER (Before renewables)				17.51	13.01
Average Improvement from efficiency measures					25.7%

Table 1: SAP modelling results

## 5.2 Be Green

Camden Planning Policy CS13 requires a further 20% reduction of regulated emissions from on-site renewables. The proposal is to incorporate a minimum of roof mounted PV's as detailed in Table 2 below:

	Roof Area m <sup>2</sup>	Proposed KWp	Annual Output kWh/yr	Annual KgCO <sub>2</sub> Offset	KWp/m <sup>2</sup> TFA
Block A	74	4	3292	1709	0.0061
Block B	238	9	7407	3844	0.0061

Table 2: PV Calculation

The proposal is to incorporate a minimum of 4KWp & 9KWp on Block A and B respectively. At 7m<sup>2</sup> of collector area per KWp, this will require no less than 28 m<sup>2</sup> for Block A and 63 m<sup>2</sup> for Block B.

## 5.3 Total Emissions Reduction

On this basis, the total emissions reduction from the combined efficiency and renewable energy measures are as summarised in Table 3 below. This indicates that the proposed be Lean, Be Clean & Be Green strategy shall reduce the predicted regulated emissions from 35.7 tonnes per annum to 21.2 tonnes per annum, an overall reduction of 41% compared to the current Building Regulations standard.

With PV						
Flat	TFA m <sup>2</sup>	TER KgCO <sub>2</sub> .yr/ m <sup>2</sup>	DER KgCO <sub>2</sub> .yr/ m <sup>2</sup>	TER x TFA KgCO <sub>2</sub> /yr	DER x TFA KgCO <sub>2</sub> /yr	Min. PV Required
A1	72.5	18.34	12.19	1330	884	0.44
A2	72.5	15.53	10.57	1126	766	0.44
A3	72.5	15.75	10.74	1142	779	0.44
A4	62.5	21.34	12.53	1333	783	0.38
B1	119.2	18.30	11.67	2182	1391	0.73
B2	74.8	21.77	14.41	1629	1078	0.46
B3	96.1	19.97	12.95	1919	1244	0.59
B4	50.2	19.95	12.08	1001	606	0.31
B5	48.0	21.75	13.03	1044	625	0.29
B6	53.9	18.08	10.17	974	548	0.33
B7	53.9	18.08	10.17	974	548	0.33
B8	48.2	21.24	12.13	1024	585	0.29
B9	49.0	19.39	11.26	950	552	0.30
B10	104.0	15.29	8.24	1591	857	0.63
B11	60.9	17.10	9.53	1041	580	0.37
B12	60.9	17.10	9.53	1041	580	0.37
B13	103.2	15.45	8.33	1595	860	0.63
B14	86.6	16.22	9.00	1403	779	0.53
B15	79.0	15.71	8.68	1240	686	0.48
B16	84.2	15.25	8.40	1284	707	0.51
B17	80.7	16.88	9.50	1362	766	0.49
B18	86.6	16.22	9.00	1403	779	0.53
B19	79.2	15.34	8.24	1215	652	0.48
B20	78.7	18.77	11.62	1477	914	0.48
B21	45.5	19.72	11.93	897	543	0.28
B22	94.6	17.60	10.52	1665	995	0.58
B23	123.7	15.29	9.31	1891	1152	0.75
Total	2040.9			35732	21240	12.4

Table 3: Combined emissions reduction

## 5.4 Unregulated Emissions

Although not included in the emissions reduction calculation, the London Plan requests the reporting of predicted carbon emissions associated from small power and cooking consumption. These are summarised in Table 4 below.

Dwelling	TFA m <sup>2</sup>	Appliances KgCO/m <sup>2</sup> .yr	Cooking KgCO/m <sup>2</sup> .yr	Sub-Total KgCO <sub>2</sub> /yr
A-1	72.5	16.60	2.40	1378
A-2	72.5	16.60	2.40	1378
A-3	72.5	16.60	2.40	1378
A-4	62.5	16.99	2.69	1230
B1	119.2	14.13	1.57	1871
B2	74.8	16.50	2.35	1411
B3	96.1	15.41	1.91	1664
B4	50.2	17.44	3.18	1035
B5	48.0	17.54	3.29	1000
B6	53.9	17.30	3.01	1095
B7	53.9	17.30	3.01	1095
B8	48.2	17.53	3.28	1003
B9	49.0	17.49	3.24	1016
B10	104.0	14.96	1.78	1741
B11	60.9	17.05	2.75	1205
B12	60.9	17.05	2.75	1205
B13	103.2	15.01	1.80	1735
B14	86.6	15.92	2.09	1559
B15	79.0	16.30	2.25	1465
B16	84.2	16.05	2.14	1531
B17	80.7	16.22	2.21	1487
B18	86.6	15.92	2.09	1559
B19	79.2	16.29	2.24	1467
B20	78.7	16.32	2.26	1462
B21	45.5	17.66	3.44	960
B22	94.6	15.49	1.94	1649
B23	123.7	13.89	1.52	1906
Total				37483

Table 3: Predicted Unregulated Carbon Emissions

## **6.0 Zero Carbon Offset**

In line with GLA Zero Carbon policy, the remaining unregulated emissions are to be offset using a cash in lieu contribution to the Camden Zero Carbon fund. The current offset price is £60/tonne/year based on 30 years, therefore equal to £1800 per tonne.

Following the efficiency and renewable strategy detailed herein, the scheme is predicted to result in regulated emissions of 21.2 metric tonnes carbon per annual. Therefore, the Zero Carbon Fund contribution will be £38,160.