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Planning Department  
Enfield Council  
Civic Centre  
Silver Street  
London  
EN1 3XA

**Re: 368 Green Lanes, London, N13 5PE**

Dear Sir/Madam

In order to demonstrate that the proposed dwellings have been designed in accordance with the planning condition, the CO<sub>2</sub> emissions for each flat will be reduced by at least 19% using energy efficiency measures, highly efficient heating and hot water systems and renewable technologies.

The baseline CO<sub>2</sub> emissions for Flat A are 16.39 kgCO<sub>2</sub>/m<sup>2</sup>/year.

This is reduced to 7.83 kgCO<sub>2</sub>/m<sup>2</sup>/year, a reduction of 52.23%.

The baseline CO<sub>2</sub> emissions for Flat B are 12.15 kgCO<sub>2</sub>/m<sup>2</sup>/year.

This is reduced to 8.17 kgCO<sub>2</sub>/m<sup>2</sup>/year, a reduction of 32.76%.

The baseline CO<sub>2</sub> emissions for Flat C are 14.98 kgCO<sub>2</sub>/m<sup>2</sup>/year.

This is reduced to 8.96 kgCO<sub>2</sub>/m<sup>2</sup>/year, a reduction of 40.19%.

This will be achieved by incorporating the following measures:

Existing external walls will be insulated internally with 112.5mm Kingspan K17 or K18 insulated backed plasterboard.

Existing roof will be insulated with 100mm rigid PIR insulation between the rafters and have a further 50mm fixed underneath.

Existing separating floor over the commercial unit on the ground floor will have 150mm PIR rigid insulation laid between the timber joists.

All windows, doors and velux will be replaced with new highly efficient units. Windows will have u-values no higher than 1.1. Velux windows will have u-values no higher than 1.4. The solid front doors will have u-values no higher than 0.6.

Each flat will benefit from a new electric boiler combined with time and temperature zone controls and a fully programmable thermostat for more controllable and efficient space heating.

Each flat will also benefit from a highly efficient 170 litre Megaflo immersion heater for hot water heating.

100% of the light fittings internally will be dedicated low energy fittings.

### **Air Tightness**

Heat loss may also occur due to air infiltration. Although this cannot be eliminated altogether, good construction detailing and the use of best practice construction techniques can minimise the amount of air infiltration.

The proposed development will aim to achieve Part L Building Regulations (2022) target air permeability rate of 8m<sup>3</sup>/m<sup>2</sup> at 50Pa through good detailing and draught proofing in each section of the development.

### **Be Green - use renewable energy**

A feasibility study was carried out for this development and a range of renewable technologies were analysed. The analysis included a biomass heating system, ground source heat pumps, air-source heat pumps, solar photovoltaics, solar thermal and wind turbines.

The analysis identified individual solar photovoltaics as a suitable technology for inclusion in the proposed development. To be precise:

Flat A will benefit from a solar PV system which will be 2.2kW in size and it will be situated on the new flat roof at the top of the building. It will suffer from minimal overshadowing by the nearby buildings.

Flat C will also benefit from a solar PV system which will be 1kW in size and it will be situated on the new flat roof at the top of the building. It will suffer from minimal overshadowing by the nearby buildings.

### **High Efficacy Lighting**

The development intends to incorporate 100% low energy lighting fittings throughout the habitable spaces. All light fittings will be specified as low energy lighting, and will accommodate LED, compact fluorescent (CFLs) or fluorescent luminaires only.

### **Thermal Mass**

During peak summer periods the thermal mass of the building will absorb and store excess heat. The building will release its heat in the cooler evenings to allowing for cooler internal spaces dampening the peak diurnal weather conditions.

## **Ventilation**

Mechanical ventilation systems are to be installed in the kitchens and wet rooms to prevent a build up of moisture and condensation.

Passive ventilation of the dwelling will also be possible by providing openable windows that allow for cross ventilation, should occupants wish to use this.

## **Photovoltaic Panels – Adopted**

Four types of solar cells are available on the market at present and these are mono-crystalline, poly-crystalline, thin film and hybrid panels. Although mono-crystalline and hybrid cells are the most expensive, they are also the most efficient with an efficiency rate of 12-20%. Poly-crystalline cells are cheaper but they are less efficient (9-15%). Thin film cells are only 5-8% efficient but can be produced as thin and flexible sheets.

Photovoltaics are considered a suitable technology for this development for the following reasons:

The development provides a large enough space on the flat roof at the top of the building for the installation of PV panels, giving the opportunity to locate them in an efficient position at this development.

PV arrays are relatively easy to install when compared to other renewable systems.

PV panels provide a significant amount of CO<sub>2</sub> savings, and can be added to in the future.

Based on the reasons above, photovoltaics would be a suitable renewable technology for the proposed development.

## **Location of Photovoltaic Panels**

An appropriate location for the proposed photovoltaic panels was identified once the site constraints were taken into account. It is proposed that PV panels, laid on the flat roof will allow for good electricity generation. The solar PV systems will be 2.2kW and 1kw in size and they will suffer from minimal overshadowing by the nearby buildings.

The potential water consumption by the occupants of each flat will not exceed 105 litres per person per day through the installation of taps and showers with reduced flow rates and baths and WCs with smaller capacities, to be precise:

All basin taps will have a flow rate no higher than 4 litres/minute.

All showers will have a flow rate no higher than 9 litres/minute.

All baths will have a capacity no higher than 140 litres.

All WCs will have a dual flush system with capacities no higher than 4 and 2.5 litres.

This can be seen in the attached water efficiency calculations.

If you require any further information, please don't hesitate to contact me.

Yours Faithfully

Damian Selim