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Sustainability and Energy Efficiency Statement

Proposal: **Redevelopment of Existing 4 Bed Dwelling and Erection of 4 Bed Residential Dwelling with Basement.**

Site: **58a Redington Road London NW3 7RS**

Prepared by:-

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1.0 Introduction

1.1 The government has introduced regulations to make new buildings more energy efficient. Camden has a number of polices seeing energy and waste efficiency.

1.2 As part of the assessment with regard to sustainability and Policy CC1 the plan requires an explanation for demolition. The demolition is explained the Structural Report prepared by ed. The report makes clear that the extent and nature of the intrusive works make it more efficient to partially demolish and re build. A benefit will also accrue in amenity terms by making the build programme quicker and avoiding slower and piecemeal demolition thereby limiting disturbance. It should also allow a better opportunity for segregation of larger materials to be recycled.

1.3 All new dwellings require a calculation to demonstrate compliance with the current building regulations. This is carried out using a government established Standard Assessment Procedure (SAP).

1.4 The calculation is based on the energy balance taking into account a range of factors that contribute to energy efficiency:

- Materials used for construction of buildings
- Thermal insulation for the building fabric
- Ventilation characteristics of the dwelling and ventilation equipment
- Efficiency and control of the heating system(s)
- Solar gains through openings of the dwelling
- The fuel used to provide space and water heating, ventilation and lighting
- Renewable energy technologies

1.4 The SAP scale runs from 1 (poor) to 100 (excellent) and is based on estimated annual energy use for space heating, hot water, ventilation and

internal fixed lighting. A SAP of 100 now represents zero energy cost for these items. It can be above 100 for dwellings that are not exporters.

- Target Emission Rate (TER)

1.6 The TER is based on a notional dwelling of the same size and shape. The TER is estimated using a parallel SAP calculation base on the same dimensions as the proposed dwelling, but using a set of reference values for the building fabric and the heating systems etc. These reference values include 'U' values for main building elements that correspond to those required to meet the elemental method of compliance with Part L1 of the Building Regulations.

- Dwelling Emission Rate (DER)

1.7 This is the estimated annual carbon dioxide emissions per square metre due to space heating, domestic hot water, ventilation and internal fixed lighting minus any carbon emissions saved by the generation of electricity. Within the DER calculation default is used for internal fixed lighting which cannot be changed, the DER is an output from the SAP calculation.

- U-Value

1.8 The U-value describes how well a building element conducts heat. It measures the rate of heat transfer through a building element over a given area, under standardized conditions. The usual standard is at a temperature gradient of 24 °C, at 50% humidity with no wind (a smaller *U-value* is better).

Fabric U-Values

Element	Average (W/m2K)
Wall	0.26
Floor	0.22
Roof	0.14
Openings	1.47

2.0 Development Plan

2.1 The relevant policy in the Camden Local Plan is CC1 which states;

Policy CC1 Climate change mitigation The Council will require all development to minimise the effects of climate change and encourage all developments to meet the highest feasible environmental standards that are financially viable during construction and occupation. We will:

a. promote zero carbon development and require all development to reduce carbon dioxide emissions through following the steps in the energy hierarchy;

b. require all major development to demonstrate how London Plan targets for carbon dioxide emissions have been met;

c. ensure that the location of development and mix of land uses minimise the need to travel by car and help to support decentralised energy networks;

d. support and encourage sensitive energy efficiency improvements to existing buildings;

e. require all proposals that involve substantial demolition to demonstrate that it is not possible to retain and improve the existing building; and

f. expect all developments to optimise resource efficiency. For decentralised energy networks, we will promote decentralised energy by:

g. working with local organisations and developers to implement decentralised energy networks in the parts of Camden most likely to support them;

h. protecting existing decentralised energy networks (e.g. at Gower Street, Bloomsbury, King's Cross, Gospel Oak and Somers Town) and safeguarding potential network routes; and Camden Local Plan | Sustainability and climate change 251

i. requiring all major developments to assess the feasibility of connecting to an existing decentralised energy network, or where this is not possible establishing a new network.

To ensure that the Council can monitor the effectiveness of renewable and low carbon technologies, major developments will be required to install appropriate monitoring equipment.

3.0 Site Address

3.1 The development site is located 58a Redington Road London NW3.

3.2 The Camden Local Plan has detailed carbon targets arising from Policy CC1 Climate Change Mitigation, this states;

> **The Council will require all development to minimise the effects of climate change and encourage all developments to meet the highest feasible environmental standards that are financially viable during construction and occupation.**
>
> **We will:**
>
> a. **promote zero carbon development and require all development to reduce carbon dioxide emissions through following the steps in the energy hierarchy;**
> b. **require all major development to demonstrate how London Plan targets for carbon dioxide emissions have been met;**
> c. **ensure that the location of development and mix of land uses minimise the need to travel by car and help to support decentralised energy networks;**
> d. **support and encourage sensitive energy efficiency improvements to existing buildings;**
> e. **require all proposals that involve substantial demolition to demonstrate that it is not possible to retain and improve the existing building; and**
> f. **expect all developments to optimise resource efficiency. For decentralised energy networks, we will promote decentralised energy by:**
> g. **working with local organisations and developers to implement decentralised energy networks in the parts of Camden most likely to support them;**
> h. **protecting existing decentralised energy networks (e.g. at Gower Street, Bloomsbury, King's Cross, Gospel Oak and Somers Town) and safeguarding potential network routes; and**
> i. **requiring all major developments to assess the feasibility of connecting to an existing decentralised energy network, or where this is not possible establishing a new network.**

To ensure that the Council can monitor the effectiveness of renewable and low carbon technologies, major developments will be required to install appropriate monitoring equipment.

3.3 The aim of Policy CC1 is to prevent development having a negative impact on the surrounding climate. New development will aim to reduce carbon emissions in the borough. Demolition and material processing and recycling is considered in the Structural Report on Demolition.

4.0 Description of Proposed Development

4.1 The proposal is for the demolition of the existing 4 bedroom dwelling and the erection of a new 4 bed dwelling with a basement.

5.0 Building Regulations

5.1 The proposed building will be designed to comply with the requirements of Part L1 of the Building Regulations and to that end all construction details will be selected to meet those requirements.

6.0 Site Analysis

6.1 The site is previously developed land and a home which has undergone exstensive external alterations.

7.0 Energy Efficiency Assessment

7.1 A predicted carbon emissions statement has been calculated taking into consideration the design, layout and materials of the development.

8.0 Materials

- Walls

8.1 The materials proposed for the external walls will be chosen to increase the efficiency of the proposed development.

8.2 The current Building Regulations u-value for external walls is 0.30w/m2k this proposal aims to have external walls that are 0.25w/m2k which is a 16% improvement.

8.3 This will contribute to better heating and energy efficiency.

8.4 The development has been designed with windows and doors openings to co-inside with frame dimensions to limit the amount of wasted materials.

8.5 The insulation this figure has been calculated on is based upon one similar to Kooltherm K10 Soffit Boards, which has a very low impact on the environment and is classified as Zero ODP.

8.6 The BRE green guide rating for such a wall is A+

- Ground Floor

8.7 Again the proposed materials for the ground floor will be chosen to increase the efficiency of the development.

8.8 The current building Regulations u-value for ground floor is 0.25w/m2k where as our proposals for the ground floor is 0.22w/m2k which is a 12% improvement. This will contribute to better heating and energy efficiency.

8.9 The BRE green guide rating for such a ground floor is B

- Roof Insulation

8.10 The proposed materials for the roof insulation will be chosen to increase the efficiency of the development.

8.11 The current Building Regulations u-value for a roof is 0.16w/m2k where as our proposal for the roof is 0.14w/m2k which is a 12.5% improvement. This will contribute to better heating and energy efficiency.

8.12 The BRE green guide rating for the roof is A+

- Lighting

8.13 Lighting within the dwellings has been designed so that fittings are central in each room maximising the spread of light. 100% of the light fittings

within the development (internal and external) will be energy efficient fittings providing a prediction of 45.98Wh/year saving.

8.14 The proposed boiler for the development is based upon one similar to Worcester Greenstar, Heatslave which provides hot water and heating. TRV's will be installed away from a heat source.

8.15 This boilers efficiency is 90.3% which is 4% above the permitted efficiency.

8.16 Pipe work for the heating system will be insulated to increase efficiency.

8.17 The proposed windows and doors for the development have been selected to provide maximum efficiency, these are double glazed PCV-U units, air filled providing a u-value of 1.5w/m2k.

8.18 The full specification of the contribution will need to be refined and this statement demonstrates one way of achieving a carbon reduction.

8.19 This is not an outline application however; it is an application where some of the construction materials may not be known at this stage. Once the principle of the development has been established it will be possible to provide full details of the construction materials in order that a further detailed assessment of the carbon reduction can be clarified.

8.20 Nonetheless the submitted Sustainability and Energy Efficiency Statement demonstrates that a carbon reduction of 12% could be achieved by suggesting a number of specifications for the materials used in the construction, details of roof insulation, and suggestions of light positioning, space heating and details of windows. One option, and as suggested in the climate change and pollution SPD, would be to condition the levels of the technical details that are suggested in the sustainability statement in order for the LPA to be satisfied that a carbon reduction of around 12% could be achieved.

9.0 Conclusions

9.1 Overall for the wall, ground floor and roofs there is a predicted 12% reduction in carbon dioxide emissions over the current Building Regulations for each dwelling.

9.2 The development will include a number of energy efficient measures to achieve this reduction in carbon dioxide emissions such as:

- Super Efficient LED Lights
- Insulation
- Low E Double Glazing; and
- Combination Boiler

9.3 This proposal would achieve a very good SAP rating.

9.4 This reduction of 12% would achieve the requirements of Camden's development plan.

9.5 If a planning condition is reasonably required to achieve this carbon reduction then this can be imposed on any permission and this would accord with the Secretary of State's advice.