SUSTAINABILITY STATEMENT

PROPOSED BASEMENT

21 ABERDARE GARDENS, LONDON, NW6 3AJ

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INTRODUCTION

This report sets out the sustainability issues and targets intended for the development at 21 Aberdare Gardens, London, NW6 3AJ. The development comprises the extension of an existing cellar into a full footprint basement; the new build basement measuring 159m² in total.

There is a requirement to submit a sustainability statement that will demonstrate how the project will aspire to the sustainability requirements of Camden Core Strategy Policy CS13 (Tackling climate change through promoting higher environmental standards) and LDF Policy DP22 (Promoting sustainable design and construction).

Further guidance is taken from Camden Planning Guidance 3 (Sustainability) which would be applicable to the proposed basement extension at 21 Aberdare Gardens: - "2.4 - All developments are expected to reduce their carbon dioxide emissions by following the steps in the energy hierarchy to reduce energy consumption" as well as seeking to adopt the principles behind the Code for Sustainable Home and/or Eco Homes 2006; where possible and feasible. The Developer of the site acknowledges the current issue with regard to concerns about climate change and the contribution that building stock makes in the form of emissions to the atmosphere, the use of water, waste generation and the use of polluting materials.

2.0 SUSTAINABILITY & THE ENERGY HIERARCHY

The London Plan 2011 lays down the methodology for the use of the energy hierarchy in 3 stages

Stage 1 - Be Lean

Use energy efficiently - reduce carbon dioxide emissions through the energy efficient design of the site, buildings and services

Stage 2 - Be Clean

Use clean energy - proposals to further reduce carbon dioxide emissions through the use of decentralised energy where feasible, such as district heating and cooling and combined heat and power (CHP)

Stage 3 - Be Green

Reduce emissions via the use of renewable technologies - proposals to further reduce carbon dioxide emissions through the use of on-site renewable energy technologies

2.1 Baseline Energy Model

In order to consider the development against the energy hierarchy, a "baseline" energy model must be established – i.e. the minimum energy efficiency required to meet the Building Regulations Part L, which in the case of the proposed extension, would be Approved Document L1B
AD L1B requires existing thermal elements, if they are to be refurbished, to be refurbished to a minimum U-Value standard, and for new build element to meet a minimum U-Value standard as set out in the table below:

Element	AD L1B U -Value Standard
Retained Walls	0.30
New Walls	0.28
Retained/New Roof - pitched	0.16
Retained/New Roof - flat	0.18
Replacement Windows	1.6
Replacement Doors	1.8
Air permeability	$15m^3/Hr/m^2$
Low Energy Lighting	75%

AD L1B u value standards

While the replacement of controlled services is governed by the Domestic Heating Compliance Guide:

Controlled Service	AD L1B Compliance Requirement
Mains Gas Boiler	86% Efficient
DHW storage	38mm Foam insulation
Controls	Programmer, Stat and TRVs

Therefore, before apply the energy hierarchy to the subject development; it is assumed that the "baseline" efficient development will meet the above minimal standards

2.2 Use Energy Efficiency

The scheme will be designed to limit the emissions of carbon dioxide to the atmosphere from the operation of the building services via the use of good building fabric, i.e. be lean – use less energy; step 1 of the energy hierarchy. To achieve this, the development will adopt the principles of "best practice" u-values for the new build extension as noted in CPG 3:-

- New basement and external walls – u value=0.20
- New basement floor – u value=0.20
- New glazing – u=1.5

To further improve fabric efficiency in the ground floor element, the developer will undertake the following retrofitting works as identified in Appendix 1 of CPG 3:-

- Insulate internal walls to meet a minimum u value of 0.30; any further improvement on this would detrimentally affect the net internal space.
- Retrofitting of insulation to intermediate floors and internal walls to (un-heated) common areas.

In terms of the operation of building services, the following strategies will be adopted: -

- New high efficiency gas combination boilers (90% SEDBUK efficiency) will DHW in unvented highly insulated tanks to further enhance efficiency
- Controls will be upgraded via the use of TRVs, wall stats and timers to provide full interlock mechanism to ensure that boilers are only firing when required
- Under floor heating will be installed in the new build element to take advantage of the thermal mass of the building and to enable the heating system to run at lower temperatures and therefore more efficiently.
- Internal service pipework will be insulated to reduce transmissions losses.
- Where possible the use of LED low energy lighting will be adopted, where this is not possible, dedicated compact fluorescent lighting pendants will be installed.

Further energy efficiency measures to assist the reduction of consumption of unregulated energy use is noted under 2.3

2.3 Use Clean Energy

The energy hierarchy goes on to consider how energy can be supplied more efficiently via connection to decentralised supplies such as community heating or CHP provisions.

Clearly, for a small refurbishment/extension project of <200sqm, the provision of community heating within the development is not practical and would offer no efficiency savings. However, the use of "traditional" gas boilers, with the flow and return temperatures similar to community schemes, does mean that, as and when such a network was available in the area – the property at 21 Aberdare Gardens would have the facility to connect to the network.

2.4 Use of Renewable Technologies

There is also a requirement to reduce CO2 emissions from the development using renewable or low carbon energy sources. Therefore this report will briefly considered the feasibility of the following technologies:

☐ Wind turbines
☐ Solar hot water
☐ Photovoltaic systems
☐ Biomass heating
☐ CHP (Combined heat and power)
☐ Ground source heating
☐ Air source heating

Wind turbines

Wind turbines produce electricity from wind power – clearly they require an open aspect and thus are clearly more appropriate in rural areas

Solar hot water

Solar thermal systems harness the suns energy to heat hot water via roof mounted panels. Without access to individual roof space in a Conservation area, this system cannot be considered for this basement extension project

Photovoltaic systems

Solar "PV" systems are roof mounted panels with photocells that generate electricity from the Sun's light. Again without access to roof space in a Conservation area, they cannot be considered for this project

Biomass heating

Biomass heating uses plant matter as a fuel source. It requires a special boiler and storage space for the fuel – usually in a pelleted format. The major drawback for biomass is the much increased level of nitrous oxide emissions – which would be a considerable problem in dense urban and suburban areas such as the London Boroughs. This reason, and the lack of available space, would preclude the consideration of the this system

CHP (Combined heat and power)

Under the renewables section, CHP refers to domestic micro CHP systems. As yet an unproven technology and as such, cannot be recommended.

Ground source heating

Ground source heat pumps extract the heat from the ground (or bodies of water) through collector loops prior to passing through a refrigeration "evaporation/compression heat exchange cycle which passes the heat into central heating systems
Although a highly efficient system, it requires considerable external space for the heat collector loops and as such is not practical for the development under consideration

Air source heating

Delivering heat into the property via the same mechanism as the ground source heat pump, an air source heat pump uses the evaporator unit to extract heat directly from the air. The evaporator unit sits externally and is relatively compact

Given the small external area available – it *may* offer an opportunity to deliver renewable energy to the development at 21 Aberdare Gardens, but there may well be an issue of noise nuisance which would have to be investigated prior to further consideration.

In addition, air source heat pumps are very marginal when it comes to actually reducing emissions although up to 4 times more efficient than a condensing gas boiler, grid based electricity emits over 2.5 times the carbon emissions per KWh.

Once it is considered that the above noted efficiencies rely on low temperature flow rates (35o – 40o) to under floor heating in well insulated properties – the retro fitting of such systems in properties of townscape merit with single glazing etc, are results in the requirements for higher flow temperatures, reduced efficiencies and increased emissions.

With this in mind, it would be difficult to recommend the investment in an air source heat pump for this development.

2.5 Eco Homes & Code for Sustainable Homes Principles

Due to the small scale nature of the development, LDF Policy DP22's requirement for a formal Eco Homes assessment does not apply. However, the developer is committed to adopting many of the principles of Eco Homes and the Code for Sustainable Homes: -

Energy

Unregulated energy use will be reduced via the provision of clothes drying facility in the rear garden, ensuring that all external lighting is energy efficient, providing a display energy device to enable occupants to monitor, and thereby manage their energy use and to supply information on the EU Energy Rating system to enable informed purchasing of white goods for the home.

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Water

All newly installed sanitary ware will be selected to reduce wholesome water use – dual flush toilets, showers, basin and kitchen taps with flow restrictors and selecting baths with limited capacity. In addition, a water butt will be installed to the rear garden to enable the harvesting of rainwater for the upkeep of soft landscaping

Materials

The re-use of much of the building structure is sustainable by definition as much material is retained in situ. In addition, the developer will ensure that the suppliers of building materials, where practical, can demonstrate a policy of responsible sourcing

Waste

The main contractor will be required to put in place a site waste management plan to ensure minimal waste arising from site and to ensure that much of the construction waste is diverted from landfill. In addition, the main contractor will be required to join the Considerate Constructors Scheme and meet the minimum level of "Best Practice"

Pollution

All insulants used within the development will have a rating of zero for ODP and have GWP of less than 5. New high efficiency boilers will be selected that have NO2 emissions at less than 40mg/Kwh

Ecology

The nature of the development will have limited effect on the ecology of the site, indeed, the Code for Sustainable Homes would rate the effect as "neutral", however the developer is committed to a remodelling of the rear gardens with the use of indigenous planting to offer a minor enhancement of site ecology

CONCLUSIONS/SUMMARY

It is the intention of the developer to deliver a sustainable development as defined within the policies of Camden Council; the same polices that have informed this report and the recommendations within. The policies require the developer to commit to the principles of the energy hierarchy and BREEAM sustainable development, and as can be seen above the developer has identified opportunities when they are able to do so, and will deliver these principles as part of the development, thereby meeting the minimum sustainability requirements of Camden Council and advancing the development beyond those requirements.

Prepared by **Dig For Victory Limited** – 20 Mortlake High Street, London, SW14 8JN

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For **Mr von Polach and Ms Macit**