62 Avenue Road, Camden, NW8 6HT

PLANNING ENERGY STATEMENT IN SUPPORT OF:

PROPOSED NEW FIVE STOREY DWELLING

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Leema
Technologies Ltd

New Residential Development, 62 Avenue Road, London
Planning Sustainability Statement

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1.0 EXECUTIVE SUMMARY

The proposed development seeks to achieve Code for Sustainable Homes Level 3 to mitigate many of the issues raised in Camden Core Strategy CS 13, Camden Development Policy DP22, DP23 and DP32. The principles of which are covered in this report.

The total on-site energy generation results in a 25% reduction in Carbon Emissions using a combination of Air to Water Heat Pumps and gas fired combined heat & power.

There is a Baxi Dachs G 5.5 Combined Heat & power unit to provide heating and hot water. This will require an Air Quality Information Request Form which is provided.

2.0 INTRODUCTION

This report will seek to satisfy the requirements set out in the following Planning Policies:-

Camden Core Strategy CS 13:	Tackling climate change through promoting higher environmental standards.
Camden Development Policy DP22:	Promoting sustainable design and construction
Camden Development Policy DP23:	Water (Internal only)
Camden Development Policy DP32:	Air Quality and Camden's Clear Zone

Camden Core Strategy CS13 outlines their commitment to reduce Camden's carbon dioxide emissions in line with the national target of 80% by 2050. It is identified that 30% of Camden's carbon emissions come from Domestic Buildings. It is therefore an important part of the plan to significantly reduce carbon emissions to new dwellings.

The proposed new dwelling is required to achieve a 20% reduction in carbon emissions with the use of on-site renewable energy generation or with the connection to a district heating or CHP system.

The principle purpose of this Sustainability Statement is to demonstrate the proposed development is energy efficient, provides no adverse risk to air quality, minimizes water consumption and provides on-site energy generation.

The proposed development will also target a Code for Sustainable Homes Level 3 rating. This will mean achieving a minimum of 25% improvement on current Building Regulation standards.

3.0 ENERGY STATEMENT

This project will be designed and assessed under Part L 2010 Building Regulations. We have therefore extracted data from a draft SAP calculation for the proposed property to determine the predicted energy demand and Carbon Emissions.

The swimming pool has a capacity of 162,000 litres. Based on this the annual heating energy consumption is 25,800 kWh (included in Table 1). We intend to use a gas fired Baxi Dachs 5.5kW Combined Heat & Power (CHP) unit to heat the swimming pool. The power to heat ratio is generally 1 to 3 so for every 3kW of heat produced, the CHP unit produces 1kW electricity. It is therefore predicted that the CHP unit will produce 8,600 kWh/year electricity generation.

A summary of the predicted energy demand is indicated in table 1 below:

Table 1: Predicted Energy demand before and after renewable energy generation

	m2	Heat (kWh/yr)	Water (kWh/yr)	Elec (kWh/yr)	TOTAL (kWh/yr)
Energy Consumption					
Before	1223	61,012	31,439	55,035	147,486
After	1223	34,864	40,872	46,435	122,171
Difference		**26,148**	**-9,433**	**8,600**	**25,315**

The 'Before' data is a standard dwelling with no renewable energy. The 'After' figures are based upon the application of Air to Water Heat Pumps with a seasonal efficiency of 175% of the space heating and hot water.

We have allowed for 45kWh/m^2/year for domestic electricity which includes for lighting, appliances, pumps and other associated items.

The predicted efficiency using a gas boiler for 'before' is 90.5% and the CHP boiler efficiency is 68%. This results in an increase in water heating energy consumption of 9,433 kWh/year but is offset with electrical energy generation of 8,600 kWh/year.

Using the figures in Table 1, we calculated the predicted Carbon Emissions based on 0.517kgCO_2/kWh/year or electricity and 0.194 kgCO_2/kWh/year for gas. The space heating is electric before and after. The CHP boiler is gas. The results are summarized in Table 2 below:

Table 2: Predicted Carbon Emissions before and after renewable energy generation

	m2	Heat (kgCO2/yr)	Water (kgCO2/yr)	Elec (kgCO2/yr)	TOTAL (kgCO2/yr)
Carbon Emissions					
Before	1223	31,543	6,521	28,453	66,517
After	1223	18,025	8,226	23,577	49,828
Difference	N/A	-13,519	1,705	-4,876	-16,689
Percentage		**43%**	**-26%**	**17%**	**25%**

The overall carbon emission savings for development are therefore 25%.

Further notes regarding CHP.

It is predicted that the CHP unit will produce 8,600 kWh/year electricity generation. This would be considered renewable energy generation and therefore saves 0.567 $kgCO_2$/kWh/Year. This equates to 4,876 $kgCO_2$/year reduction in annual carbon emissions.

The CHP unit will have 68% boiler efficacy so will require 37,940 kWh gas to provide the require hot water demand. This will produce an additional 1,705 $kgCO_2$/annum in carbon emissions.

The CHP Unit therefore saves a total of 3.2 tonnes CO_2/Year.

3.01 Site Waste Management

There is an existing dwelling on site. This property has been deemed unsuitable and inflexible in space arrangement for adaptation for the 21st Century and beyond.

The client has therefore requested that the existing building is carefully deconstructed and all usable materials are either re-used on site as fill material or taken away to be recycled at local recycling facilities.

The contractor will be required to meet the criteria set out in Code for Sustainable Homes Was 2, Construction Site Waste Management. The contractor will need to provide a site waste management plan to demonstrate the following:-

a. Target benchmarks for resource efficiency, i.e. m3 of waste per 100 m2 or tonnes of waste per 100m2 set in accordance with best practice
b. Procedures and commitments to minimize non-hazardous construction waste at design stage. Specify waste minimisation actions relating to at least 3 waste groups and support them by appropriate monitoring of waste.
c. Procedures for minimizing hazardous waste
d. Monitoring, measuring and reporting of hazardous and non-hazardous site waste production according to the defined waste groups (according to the waste streams generated by the scope of the works)

Where there is a compliant Site Waste Management Plan (SWMP) including procedures and commitments to sort and divert waste from landfill, through either;

a. Re-use on site (In situ of for new applications)
b. Re-use on other sites
c. Salvage/reclaim for re-use
d. Return to supplier via a 'take-back' scheme
e. Recovery and recycling using an approved waste management contractor
f. Compost

The contract will be set the following target to achieve 2 credits under the Code for Sustainable Homes:-

Where at least 50% by weight or by volume of non-hazardous construction waste generated by the project has been diverted from landfill.

3.02 Layout, Floor Plate and Ceiling Heights

The general footprint of the building is 15 metres wide x 30 metres long. The width of the building allows for perimeter rooms that can be naturally daylit and ventilated and a central circulation core with natural light via a skylight over.

The floor to ceiling heights are generous at 3200mm. Referring to CIBSE Guide AM10 advises that single sided ventilation is effective to 2.5 x ceiling height based a double opening which is made available with sliding sash windows. The high ceilings also offer a suitable 'reservoir' to contain warm air in the summer which can be ventilated out at night time via trickle ventilators.

3.03 Windows & Ventilation

The windows are sliding sash units which provide effective ventilation. The bottom sash can slide up and the top sash can slide down. This forms two effective ventilation openings. The lower will be the intake of the cooler air. The upper opening will extract the warmer air. See figure 1 below:-

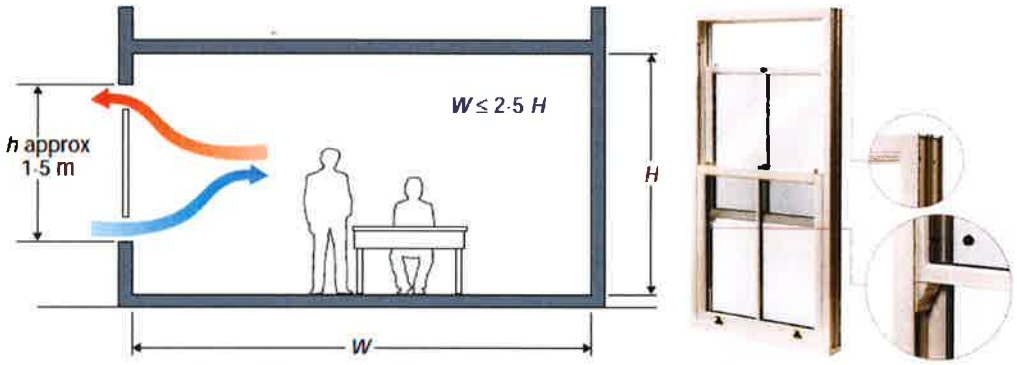

Figure 1: Single Sided Double Opening (Figure 2.19 from CIBSE AM10)

Combined with high ceilings and having two separate ventilation openings, you avoid turbulence that is experience with single opening windows and therefore provides more efficient ventilation which is particularly useful in summertime.

The windows range in size from 1125w x 1725h to 1125w x 2400h. These will allow excellent levels of daylight and provide passive solar gains into the internal spaces.

Shading is provided by the glass itself which will be a double glazed unit with low-e coating combined with multiple glazing bars. The design of the property does not lend itself to contemporary forms of external shading.

Trickle ventilators will be provided to allow for background ventilation to provide secure night-time ventilation.

Heat recovery mechanical ventilation is not included at this stage as the auxiliary power is detrimental to the building's energy performance but will be reviewed at details design stage.

3.04 Daylight & Reduction of Artificial Lighting

To meet the recommendations of Daylight provision in the Code for Sustainable Homes, they recommend a daylight factor of 1.5% to living rooms, dining rooms and studies

Currently, the ground floor sitting room, Office and Dining Room all exceed this requirement and meet the Code for Sustainable Homes standards. An examples daylight calculation is indicated in figure 2 below:

Project:	62 Avenue Road, Camden	
Project Ref:	L104	
Room:	Sitting Room	
Input:	Window area (m2)	12.15
Input:	Floor Area (m2)	68.4
Input:	Room perimeter (m)	33.54
Select:	Ceiling height (m)	3
	Total Surface Area (m2) =	237.42
Select:	Glazing Type	Double low-e
Select:	Visible Sky Angle	60 degrees
Select:	Surface Reflectance	Medium (0.5)
	RESULT:	2.39% Daylight Factor

Figure 2: Example Daylight Calculation for the Sitting Room

The central circulation stairwell receives natural light from a skylight over. Lighting in this space will be controlled via PIR and daylight sensors.

Generally the rooms are located to the building perimeter and each has a window to provide natural light.

Lighting control will be manual to occupied rooms. The circulation spaces, stores and other ancillary areas will have PIR's to operate lighting and daylight sensors.

3.05 Impact on Surrounding Renewable Resources

We have assessed the immediate local environment. Currently, there are no wind turbines, solar thermal or photovoltaic panels on adjacent properties that will be affected by the proposed development.

3.06 Ecology

Due to the nature and context of the proposed dwelling, the client is not proposing to install a green roof due to the proximity of the roof being 12 metres in the air and access for maintenance.

However, with this development, there is still a significant proportion of the land being utilized for grass and soft landscaping.

We would also provide consider installing bird nesting boxes within the development to encourage and enhance the site ecology which may be required to meet the Ecology Credits for the criteria set out in the Code for Sustainable Homes. Examples are indicated in Figure's 3 and 4 below:

Figure 3: Sparrow House

Figure 4: Starling box

We would also note that the hard surface area of the existing building + terrace + car park is GREATER than the proposed scheme. The rainwater run-off is reduced from 19litres/sec to 17 litres /sec on the proposed scheme. The proposed building is no worse for the environment than the existing building.

3.07 Recyclable Waste

The development will aim to meet the criteria of Code for Sustainable Homes Credit Was 1, Storage of Non-recyclable Waste and Recyclable Household Waste to achieve 4 credits.

As part of this, requirement there needs to be a minimum of 520 litres of external waste storage based on 100 litres for the first bedroom and 70 litres for each additional bedroom based on British Standard 5906. There are 7 bedrooms in total.

To the kitchen, we recommend the kitchen units or adjacent store cupboard (within 10 metres of the kitchen) provide an integrated 30 litre (minimum) recyclable internal waste storage unit with 3No compartments (each to be a minimum of 7 litres). An example is given below in figure 5:

Figure 5: Typical internal recyclable waste storage unit

3.08 Cycle Storage

To meet the criteria of Code for Sustainable Homes Credit Ene 8 Cycle storage. There are in excess of 4 bedrooms. We therefore require 4 cycle spaces with a minimum size of 2 metres long x 2.5 metres wide in a secure shed with a minimum of 1m2 storage space for garden tools.

This is indicated on drawing 09.090.10 to the rear garden.

3.09 Building Thermal Envelope

The proposed U values for the development are identified in table 3 below:-

Table 3: Proposed U values for the building envelope

Element	Building Regs (W/m2.K)	Proposed (W/m2.K)	Improvement
Walls	0.30 $W/m^2.K$	0.20 $W/m^2.K$	33%
Roof	0.20 $W/m^2.K$	0.11 $W/m^2.K$	45%
Floor	0.25 $W/m^2.K$	0.12 $W/m^2.K$	52%
Windows	2.00 $W/m^2.K$	1.4 $W/m^2.K$	30%
Doors	2.00 $W/m^2.K$	1.8 $W/m^2.K$	10%

The proposed dwelling is to exceed the current building regulations between 10-52% of the external insulation values.

The building fabric thermal performance will be assessed using the SAP calculation method to ensure we achieve the target rating to meet building regulations and achieve the target credits under the Code for Sustainable Homes.

3.10 Building Services

It is proposed to use a gas fired Combined Heat & Power unit to heat the swimming pool and domestic hot water.

The lower floors will be heated via under-floor heating. The upper-floors will utilize traditional radiators. The heating source will be Air to Waster Source Heat Pumps with a predicted seasonal efficiency of 175%

Lighting will be via LED lights and Compact Fluorescent fittings with high frequency ballasts. Operation will be manual to occupied spaces, however in circulations spaces and stores, we will utilize PIR and if required, daylight sensors to minimize electricity consumption.

3.11 Choice of Materials

The proposed scheme is to consider scoring the optimum points under the Code for Sustainable Homes Credit Mat 1, Environmental Impact of Materials by achieving excellent Green Guide for Specification ratings. The current proposal is to target the following Green Guide Constructions (Subject to review and approval):-

Table 4: Green guide ratings for materials

Element	Green Guide Ref	Rating	Description
Brickwork External Wall	806170046	A+	Brickwork outer leaf, insulation, medium dense solid blockwork inner leaf, cement mortar, plaster, paint
Rendered External Wall	806180150	A+	Cement rendered dense solid blockwork outer leaf, insulation, superlightweight concrete solid blockwork inner leaf, cement mortar, plaster, paint
Pitched Roof	812410006	A+	Timber trussed rafters and joists with insulation, roofing underlay, counterbattens, battens and UK produced clay plain tiles
Flat Roof	812520032	A+	Vapour control layer, insulation, timber joists, OSB/3, PVC single ply roofing membrane
Ground Floors	820140031	B	Screed on insulation laid on grouted beam and medium dense solid block flooring
Upper Floors	807280037	B	Structural topping on grouted beam and medium dense solid block flooring
Loadbearing Internal Walls	809180035	B	Dense solid blockwork with cement:lime mortar, plaster, paint
Non-loadbearing internal walls	809760003	A+	Timber stud, plasterboard, paint
Windows	813100013	A+	Durable hardwood window, double glazed, solvent borne gloss paint (non-TWAS)

For the Code for Sustainable Homes Credit Mat 2, Responsible Sourcing of materials, the design should consider materials that have accreditation with BES 6001, ISO 14001 and the Green Dragon Environmental Standard or similar approved to demonstrate the materials are responsibly sourced.

100% of the timber should be legally sourced and not on the CITES (Convention of International Trade in Endangered Species of Wild Fauna and Flora) list.

All timber should be having FSC certification to demonstrate the timber has been responsibly sourced.

The contractor will be required to prepare and operate their own Environmental Management System which will include communicating these requirements to their sub-contractors and suppliers.

3.12 Water Consumption

It is recommended to provide a water meter to serve the whole dwelling. There should then be a sub-meters provided to monitor the swimming pool and ancillary areas to the Lower Ground Floor as this are considered high water use areas exceeding 10% of the whole buildings water consumption.

With regards to water consumption, the design intent is set out in table 5 below and to be confirmed as part of the Code for Sustainable Homes assessment:

Table 5: Target water consumption rates

Device	Flow/Flush Rate	Notes
WC	3 litres	Or be fitted with a delayed inlet valve. Provide label for dual flush operation.
Taps to wash hand basin	9 litres/minute at 0.3 MPa	Recommend low flow screw down/lever taps.
Taps to kitchens	2 stage mixer	Low flow rate for rinsing and higher flow rate for filling
Showers	9 litres/minute at 0.3 MPa	Assuming a water temperature of 37°
Bath		Minimise fill capacity

3.13 Home Use Guide:

There will be the provision of a Home User Guide in line with the Code for Sustainable Homes credit criteria. Indications of the titles are as follows:-

Operational Issues

a. Environmental strategy/design 7 features
b. Energy
c. Water Use
d. Recycling & Waste
e. Sustainable DIY
f. Emergency Information
g. Links, References & Further information
h. Provision of Information in Alternative Formats

Site & Surroundings:

a. Recycling & waste
b. Sustainable Drainage Systems
c. Public Transport
d. Local Amenities
e. Responsible Purchasing
f. Emergency Information
g. Links, References & Further information

These sections should cover every aspect of building operation so the building occupier can understand, maintain and use all of the available systems and local amenities.

3.14 DP32 Air Quality

The new dwelling is to replace an existing dwelling on to an existing residential street. The air quality is therefore not likely to be altered in anyway.

Referring to Section 2.10 of the Camden Planning Guidance 6, Amenity, Air Quality, as a single house there are no requirements to carry out an Air Quality Assessment.

We also confirm the following items:-

1. As part of the Code for Sustainable Homes assessment criteria for Credit Man 3, Construction Site Impacts, the contractor will be required to achieve 2 credits and will include the following site activities:-
    a. Adopt best practice policies in respect or air (dust) pollution arising from site activities.
    b. Adopt best practice policies in respect or water (ground and water) pollution occurring on site.
2. As part of the Code for Sustainable Homes Assessment criteria, the boilers will be required to achieve NOx emissions of less than 40mg/kWh to achieve 3 credits.
3. There are no biomass boilers for the project.
4. There is a Baxi Dachs G 5.5 Combined Heat & power unit to provide heating and hot water. This will require an Air Quality Information Request Form which is provided.

4.0 SUMMARY

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