4 St Augustines Road, London NW1

Energy Statement (Rev.02)

SRS Partnership
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Issue Status

Prepared for: (Client)	Zen Developments	Hillview House 1 Hallswelle Parade London NW11 0DL
Local Authority:	Camden	London Borough of Camden Town Hall Extension Argyle Street, London WC1H 8NJ
Prepared by:	SRS Partnership	SRS Partnership 16 Oaklands Close Orpington BR5 1QQ

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Assessors Credentials: Member of Royal Institution of Chartered Surveyors (MRICS 0854781)
Accredited On-Construction Domestic Energy Assessor (OCDEA NHER 2435)
BREEAM Assessor (BRE 1070)

Date: 27th February 2013 Reference: 13-010 Revision 02

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Executive Summary

Scope of Report	SRS Partnership has been appointed to undertake an energy assessment and prepare a statement for the proposed development located at 4 St Augustines Road, London NW1 in support of planning application.
Scheme Description	The proposed scheme comprises the construction of 9no. 2 & 3 bedroom apartments as detailed under 'Site Specifics' within this report.
Purpose of Report	The purpose of this report is to establish energy use and carbon dioxide emissions for the proposed development and assess compliance with National, Regional and Local Planning Policy. The report also determines potential credits under 'Energy' within Code for Sustainable Homes (Nov 2010).
Methodology	The methodology followed in this report follows guidance set out in National and Regional Strategy 'The London Plan' supported by Camden Local Development Framework. Energy consumption figures are based on draft SAP modelling data produced using NHER Plans Assessor software following criteria of SAP 2009. Calculations have been based upon 100% of unit types and proposed construction detailed within this report.
Planning Requirements	The development is located in the London Borough of Camden who require all new residential developments to; - achieve a minimum Code for Sustainable Homes Level 4 (25% reduction in total CO^2 emissions under L1A2010/SAP 2009).
Lean	The proposal is to construct the development to high thermal performance standards with u-values exceeding minimum Building Regulation targets. The proposed building enhancements will result, as a minimum, in the building DER meeting TER under 2010 Building Regulations.
Clean	The development does not propose to include for the incorporation of Combined Heat and Power (CHP).
Green	10kWp of Photovoltaic panels/tiles are proposed to be installed which will offer circa 15**%** carbon reduction over the enhanced 'Lean' building across the development.
Code for Sustainable Homes (Nov. 2010)	The development will exceed the mandatory requirement of 25%+ improvement over current Building Regulations to achieve compliance with the mandatory requirements for CSH level 4 and subsequently meets the target under the 2011 London Plan.

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Summary	The proposed development will achieve the following:

- 32% improvement in the residential Dwelling Emission Rate (DER) over Target Emission Rate (TER) calculated using SAP 2009, exceeding mandatory target of 25% for Code for Sustainable Homes Level 4.
- 16% reduction in site wide carbon emissions through fabric enhancement and the introduction of Photovoltaic Panels (PV), including both Regulated & Unregulated emissions.
- 15% reduction in site wide carbon emissions directly through the introduction of Photovoltaic Panels/Tiles (PV), including both Regulated & Unregulated emissions.
- 10% reduction in site wide energy demand through fabric enhancement and the introduction of Photovoltaic Panels (PV), including both Regulated & Unregulated emissions.
- 8.2 credits (9.59%) under Code for Sustainable Homes 2010 across the Energy credits; Ene1; Ene2 & Ene7.

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Planning Requirements

National Policy

At National level, CLG's National Planning Policy Framework (NPPF) (March 2012) underlines the Government's commitment to sustainable development and states; the National Planning Policy Framework must be taken into account in the preparation of local and neighbourhood plans, and is a material consideration in planning decisions. Planning policies and decisions must reflect and where appropriate promote relevant EU obligations and statutory requirements.

Local planning authorities should set out the strategic priorities for the area in the Local Plan which must be prepared with the objective of contributing to the achievement of sustainable development. To this end, they should be consistent with the principles and policies set out in NPPF, including the presumption in favour of sustainable development.

Regional Policy

At Regional level, the London Plan 2011 sets out policies to accommodate a strategic plan setting out an integrated social, economic and environmental framework for the future development of London, looking forward 20 years. These policies include:

Policy 5.2
Minimising Carbon Dioxide Emissions

A. Development proposals should make the fullest contribution to minimising carbon dioxide emissions in accordance with the following energy hierarchy:

1. Be lean: use less energy
2. Be clean: supply energy efficiently
3. Be green: use renewable energy

B. The Mayor will work with boroughs and developers to ensure that major developments meet the following targets for carbon dioxide emissions reduction in buildings. These targets are expressed as minimum improvements over the Target Emission Rate (TER) outlined in the national Building Regulations leading to zero carbon residential buildings from 2016 and zero carbon non-domestic buildings from 2019.

Residential buildings:

Residential buildings:

Year	**Improvement on 2010 Building Regulations**
2010 – 2013	25 per cent (CSH level 4)
2013 – 2016	40 per cent
2016 – 2031	Zero carbon

C. Major development proposals should include a detailed energy assessment to demonstrate how the targets for carbon dioxide emissions reduction outlined above are to be met within the framework of the energy hierarchy.

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D. As a minimum, energy assessments should include the following details:

a. calculation of the energy demand and carbon dioxide emissions covered by the Building Regulations and, separately, the energy demand and carbon dioxide emissions from any other part of the development, including plant or equipment, that are not covered by the Building Regulations (see paragraph 5.22) at each stage of the energy hierarchy
b. proposals to reduce carbon dioxide emissions through the energy efficient design of the site, buildings and services
c. 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)
d. proposals to further reduce carbon dioxide emissions through the use of on-site renewable energy technologies.

E. The carbon dioxide reduction targets should be met on-site. Where it is clearly demonstrated that the specific targets cannot be fully achieved on-site, any shortfall may be provided off-site or through a cash in lieu contribution to the relevant borough to be ring fenced to secure delivery of carbon dioxide savings elsewhere.

Policy 5.3
Sustainable Design and Construction

C. Major development proposals should meet the minimum standards outlined in the Mayor's supplementary planning guidance and this should be clearly demonstrated within a design and access statement. The standards include measures to achieve other policies in this Plan and the following sustainable design principles:

a. minimising carbon dioxide emissions across the site, including the building and services (such as heating and cooling systems)
b. avoiding internal overheating and contributing to the urban heat island effect
c. efficient use of natural resources (including water), including making the most of natural systems both within and around buildings
d. minimising pollution (including noise, air and urban run-off)
e. minimising the generation of waste and maximising reuse or recycling
f. avoiding impacts from natural hazards (including flooding)
g. ensuring developments are comfortable and secure for users, including avoiding the creation of adverse local climatic conditions
h. securing sustainable procurement of materials, using local supplies where feasible,
i. promoting and protecting biodiversity and green infrastructure.

Policy 5.5
Decentralised Energy Networks

A. The Mayor expects 25 per cent of the heat and power used in London to be generated through the use of localised decentralised energy systems by 2025. In order to achieve this target the Mayor prioritises the development of decentralised heating and cooling networks at the development and area wide levels, including larger scale heat transmission networks.

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Policy 5.6 Decentralised Energy in Development Proposals	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. B. Major development proposals should select energy systems in accordance with the following hierarchy: 1. Connection to existing heating or cooling networks 2. Site wide CHP network 3. Communal heating and cooling. C. Potential opportunities to meet the first priority in this hierarchy are outlined in the London Heat Map tool. Where future network opportunities are identified, proposals should be designed to connect to these networks.
Policy 5.7 Renewable Energy	A. The Mayor seeks to increase the proportion of energy generated from renewable sources, and expects that the projections for installed renewable energy capacity outlined in the Climate Change Mitigation and Energy Strategy and in supplementary planning guidance will be achieved in London. B. Within the framework of the energy hierarchy (see Policy 5.2), major development proposals should provide a reduction in expected carbon dioxide emissions through the use of on-site renewable energy generation, where feasible.
Policy 5.8 Innovative Energy Technologies	A. The Mayor supports and encourages the more widespread use of innovative energy technologies to reduce use of fossil fuels and carbon dioxide emissions. In particular the Mayor will seek to work with boroughs and other partners in this respect, for example by stimulating: a. the uptake of electric and hydrogen fuel cell vehicles b. hydrogen supply and distribution infrastructure c. the uptake of advanced conversion technologies such as anaerobic digestion, gasification and pyrolysis for the treatment of waste.
Local Policy	At local level, relevant sustainability policies are contained within the London Borough of Camden's Core Strategy Local Development Framework 2010-2025 and Camden Development Policies 2010-2025.
CS13 Tackling climate change through promoting higher environmental standards	The Council will require all development to take measures to minimise the effects of, and adapt to, climate change and encourage all development to meet the highest feasible environmental standards that are financially viable during construction and occupation by: a) ensuring patterns of land use that minimise the need to travel by car and help support local energy networks;

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b) promoting the efficient use of land and buildings;
c) minimising carbon emissions from the redevelopment, construction and occupation of buildings by implementing, in order, all of the elements of the following energy hierarchy:

1. ensuring developments use less energy,
2. making use of energy from efficient sources, such as the King's Cross, Gower Street, Bloomsbury and proposed Euston Road decentralised energy networks;
3. generating renewable energy on-site;

and
d) ensuring buildings and spaces are designed to cope with, and minimise the effects of, climate change.

The Council will have regard to the cost of installing measures to tackle climate change as well as the cumulative future costs of delaying reductions in carbon dioxide emissions.

Local energy generation

The Council will promote local energy generation and networks by:
e) working with our partners and developers to implement local energy networks in the parts of Camden most likely to support them, i.e. in the vicinity of:

- housing estates with community heating or the potential for community heating and other uses with large heating loads;
- the growth areas of King's Cross; Euston; Tottenham Court Road; West Hampstead Interchange and Holborn;
- schools to be redeveloped as part of Building Schools for the Future programme;
- existing or approved combined heat and power/local energy networks (see Map 4);

and other locations where land ownership would facilitate their implementation.
f) protecting existing local energy networks where possible (e.g. at Gower Street and Bloomsbury) and safeguarding potential network routes (e.g. Euston Road);

Camden's carbon reduction measures

The Council will take a lead in tackling climate change by:
j) taking measures to reduce its own carbon emissions;
k) trialling new energy efficient technologies, where feasible; and
l) raising awareness on mitigation and adaptation measures.

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DP22 – Promoting sustainable design and construction	Policy DP22 – Promoting sustainable design and construction contributes towards delivering the strategy in policy CS13 by providing detail of the sustainability standards we will expect development to meet. The Council will require development to incorporate sustainable design and construction measures. Schemes must: a) demonstrate how sustainable development principles, including the relevant measures set out in paragraph 22.5 below, have been incorporated into the design and proposed implementation; and b) incorporate green or brown roofs and green walls wherever suitable. The Council will promote and measure sustainable design and construction by: c) expecting new build housing to meet Code for Sustainable Homes Level 3 by 2010 and Code Level 4 by 2013 and encouraging Code Level 6 (zero carbon) by 2016.; d) expecting developments (except new build) of 500 sq m of residential floorspace or above or 5 or more dwellings to achieve “very good” in EcoHomes assessments prior to 2013 and encouraging “excellent” from 2013; e) expecting non-domestic developments of 500sqm of floorspace or above to achieve “very good” in BREEAM assessments and “excellent” from 2016 and encouraging zero carbon from 2019. The Council will require development to be resilient to climate change by ensuring schemes include appropriate climate change adaptation measures, such as: f) summer shading and planting; g) limiting run-off; h) reducing water consumption; i) reducing air pollution; and j) not locating vulnerable uses in basements in flood-prone areas.
Summary	25 per cent reduction in CO2 emissions, (CSH level 4), achieved through the energy hierarchy: 1. Be lean: use less energy 2. Be clean: supply energy efficiently 3. Be green: use renewable energy

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Site Specifics

Proposed Development

The development comprises the construction of 9no. 2 & 3 bedroom apartments in a single block as tabled below.

Plot	Floor	B/P	Unit Type	NIFA (m²)
1	Lower Ground	3B/6P Flat	A	109.50
2	Lower Ground	2B/4P Flat	B	80.00
3	Upper Ground	3B/6P Flat	A	107.00
4	Upper Ground	2B/4P Flat	B	80.00
5	First	3B/6P Flat	A	106.50
6	First	2B/4P Flat	B	95.50
7	Second	3B/6P Flat	A	106.50
8	Second	2B/4P Flat	B	95.50
9	Third	3B/6P Flat	C	139.50
			Total Area	**920.00m²**

Baseline CO^2 Emissions	The total estimated CO_2 emissions for the site[1]: (Figures taken from SAP 2009 + BRE Ene7 Calculator Tool (Nov.2010).	**30,250** Kg CO_2/Yr
Baseline Energy Demand	The total estimated energy demand for the site (including unregulated energy demand): (Figures taken from SAP2009 NHER 2009 Assessment).	**90,550** kWh/Yr

[1] Figure extracted from Design Draft SAP Worksheets (regulated emissions) + appliances from CSH 2010 ENE 7 calculator tool (unregulated emissions).

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Energy Hierarchy

London Plan Energy Hierarchy	The London Plan's energy hierarchy takes a 'whole energy' approach and addresses energy efficiency use, energy supply efficiency and use of renewable energy. The purpose is to demonstrate that climate change mitigation measures are integral to the scheme's design and that they are appropriate to the context of the development.
Baseline calculations	In accordance with the London Plan 2011, baseline CO_2 emissions have been calculated on the energy requirement for development from the building regulation notional building (TER). In addition CO_2 emissions have been calculated on the total energy requirement for the proposal, incorporating; cooking; lights and appliances.
Be Lean	Demand reduction measures specific to the scheme are encouraged at the earliest design stage of a development and aim to reduce the demand of energy in accordance with Policy 5.3 of the London Plan. Measures typically include improvement in building fabric and energy services over Part L of the Building Regulations.
Be Clean	A 'clean' energy supply refers to the energy efficiency of heating, cooling and power systems. Planning applications should demonstrate how these systems have been selected to minimise carbon dioxide emissions in accordance with Policy 5.5 of the London Plan.
Be Green	The London Plan 2011 (Policy 5.7) seeks to increase the proportion of energy generated from renewable sources and within the framework of the energy hierarchy; major development proposals should provide a reduction in expected carbon dioxide emissions through the use of on-site renewable energy generation, where feasible.

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'Be Lean': Energy Efficiency Measures

Energy Efficiency Targets

Energy efficiency measures for the building fabric are proposed to be incorporated to reduce the energy demand and carbon emissions of the proposed scheme.

The proposed enhancements exceed minimum targets under the new 2010 Building Regulations and result in an annual saving in carbon emissions.

U-Values Modelled

Element	2010 Building Regulations minimum U-Value (W/m²K)	Proposed U-Value (W/m²K)
Floor	0.25	0.12
Walls	0.30	0.20
Party Walls	0.20	0.00
Roof	0.20	0.15
Windows	2.00	1.20-1.40

Ventilation

Whole house mechanical ventilation (MEV) as part of a balanced 'whole house' ventilation strategy. MVHR will be considered at detailed design stage.

Air-Tightness

A high performance building with good air tightness is to be achieved which does not exceed an air permeability rate of 5m³/hr/m² at 50 Pascal's. This will be achieved through ensuring attention to detail during construction and ensuring all punctures through the envelope are sealed. All units will be air tested on completion.

Heating

'A' rated (89%+ efficient) gas condensing combination boilers with boiler interlock, weather compensators and delayed start thermostats will be provided.

Heating Controls

Time & temperature zone controls will be provided to maximise efficiency of the heating system.

Water Heating

Hot water supplied through gas boilers and stored in high insulated hot water cylinders with low declared heat loss.

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Thermal Bridging	Thermal bridging calculations have been undertaken for the development. The construction has been designed in accordance with Accredited Construction Details (ACD's) allowing assignation of ACD Ψ values for each junction. Consideration will be given to exceeding ACD's and thermally modelling heat loss junctions to further reduce heat loss caused by thermal bridging. See Appendix 4 for full Construction Specification.
Summary	The proposal is to construct the development to high thermal performance standards with u-values exceeding minimum Building Regulation targets. The proposed building enhancements will result, as a minimum, in the building DER meeting TER under 2010 Building Regulations.

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'Be Clean': Combined Heat & Power

Use of Combined Heat & Power	The inclusion of combined heat and power (CHP) within the energy strategy is not considered feasible for this development. **Option 1 – Connection to existing CCHP/CHP networks** This option is currently deemed infeasible due to the lack of an existing CCHP/CHP network in the vicinity of the proposed development. The site is not located within the Camden growth areas of King's Cross; Euston; Tottenham Court Road; West Hampstead Interchange and Holborn. **Option 2 – Site wide CCHP/CHP generation powered by renewables** CCHP/CHP generation powered through renewables such as biomass is not considered feasible in this instance due to limitation issues relating to; development size; fuel storage/delivery and; air quality. **Option 3 – Gas CCHP/CHP accompanied by renewables** Gas CCHP/CHP accompanied by renewables is not considered feasible for this development given that the proposals are for a small development which is unlikely to require continuous demand. In addition maintenance costs would be high and the complexity of distribution pipework, billing and maintenance may ultimately not be desirable by the end user.
Summary	CHP is not incorporated within the proposals.

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'Be Green': Renewable Technology

25% Reduction in CO2 emissions

Low or Zero Carbon Technology/ies (LZCT) will be incorporated into the development in combination with the 'Lean' and 'Clean' measures to achieve the required 25% reduction in CO_2 emissions.

The following report section considers the feasibility of available technologies to achieve these targets.

Feasible LZC Technologies

Feasible Renewable Energy Technologies

A reduction in carbon emissions through the use of on-site renewable energy may be achieved through several technologies to generate heat or power. This section will determine the most suitable technologies taking into consideration; carbon reduction; cost effectiveness; practicality; planning; site related constraints and user desirability. The following alternatives will be considered and identified as feasible or rejected.

Wind Turbines
REJECTED

The standalone wind turbine would require sufficient open space on the site to locate the turbine and be far enough away from buildings to be able to work effectively. As no such space exists this has been excluded from consideration.

Building mounted wind turbines may be possible with turbines mounted on roof areas. The contribution of wind turbines is however likely to be limited and this is supported by Southwark's comments in their SPD that small scale wind turbines have not been shown to be highly effective.

Wind turbines have therefore been excluded from consideration.

Ground Source Heat Pumps (GSHP's)
REJECTED

GSHP's have been excluded from consideration as ground conditions are unlikely to be suitable for deep borehole excavation and it is unlikely that sufficient space exists to allow the incorporation of horizontal 'Slinky's' within the development boundaries. The complexity of this type of excavation often means that this technology is also financially unfeasible.

Photovoltaics (PV)
FEASIBLE

PV can be considered for use on this site to generate a proportion of total energy demand with panels or tiles located on the roofs.

The expense associated with this form of technology has often deterred installation, however due to market demand over recent years the costs have meant this technology is increasingly financially viable. Installation of such technology would be subject to planning approval and designers should give consideration to maintenance of the panels and electrical distribution arrangements.

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	On this development electricity would be directed back to the common areas with any surplus energy directed back to grid. Through 'feed-in-tariffs', income can be generated by the sale of surplus energy back to the energy suppliers.
Solar Thermal (ST) **REJECTED**	Solar water heating may be suitable for use within this development with collectors sited on the roof area as with PV. It is unlikely however that this technology will achieve 10% carbon reduction required for planning alone, and would therefore require this technology to be combined with another form of technology. Since PV has already been identified to achieve the required targets we see no benefit in combining two technologies and complicating design. We have therefore excluded Solar Thermal from further consideration.
Air Source Heat Pumps (ASHP's) **REJECTED**	ASHP's may be appropriate for this development; particularly if there are planning restrictions affecting the installation of roof mounted renewable technology. However the use of ASHP's precludes credits under Ene 7 and Pol 2 of Code for Sustainable Homes due to actual CO_2 emissions and high Nitrous Oxide (NOx) emissions. For the purposes of this report we have therefore rejected ASHP's.
Biomass **REJECTED**	Biomass would be able to provide the required percentage reduction in carbon emissions, however this technology would have a significant impact on local air quality in the Borough and the storage and delivery requirements of equipment and fuels would not make this a practical solution. We have therefore rejected this technology.
Summary	Photovoltaics (PV) are considered the most feasible renewable technology for this development.

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Solar Photovoltaic

10kWp of photovoltaic panels or/and tiles are proposed to the development.

Option 1

PV **panels** will be located on the **flat roof** and South orientated **pitched roof** slopes (Agar Grove elevation) of the building with a single inverter directed to the communal areas. Surplus energy will be directed back to grid to benefit from the current Feed-in-Tariff.

Estimated Output/Areas

Roof	Output kWp	Est. No. Panels (250W)	Roof Area ($m^{2)}$	Orientation
Flat	3.5	14	26.25	South
Pitched	6.5	26	41.60	South
Total	**10.0**	**40**	**67.85**	**South**

Option 2

PV **panels** will be located on the flat roof together with PV **tiles** located on the pitched South orientated roof slopes (Agar Grove elevation) of the building with a single inverter directed to the communal areas. Surplus energy will be directed back to grid to benefit from the current Feed-in-Tariff (FIT).

Estimated Output/Areas

Roof	Output kWp	Est. No. Panels (250W)	Roof Area ($m^{2)}$	Orientation
Flat	3.5	14	26.25	South
Pitched	6.5	-	58.50	South
Total	**10.0**	**14**	**84.75**	**South**

NB: The exact number of panels, output and configuration between the flat and pitched roofs will be dependent upon final construction specification and detailed design by the renewables supplier. See appendix 4 for example technical specifications.

Summary

The introduction of 10kWp of PV will result in a reduction in CO^2 emissions of:

- 15% over the 'Be Lean' building taking account of Regulated and Unregulated Emissions – see column 66, Appendix 2.

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Overall Site Energy/CO2 Reduction

Predicted Overall CO_2 Emission Reduction (**Excluding** Unregulated Emissions i.e. L1A)

The total estimated CO^2 emissions for the site: **(Kg CO2/Yr)** Figures taken from SAP 2009	**Baseline**	**'Lean & Green'**	**CO_2 Reduction**
	14,950	10,050	4,900 = 32%

Predicted Overall CO_2 Emission Reduction (**Including** Unregulated Emissions)

The total estimated CO^2 emissions for the site: **(Kg CO2/Yr)** Figures taken from SAP 2009 + BRE Ene7 Calculator Tool (Nov.2010)	**Baseline**	**'Lean & Green'**	**CO_2 Reduction**
	30,250	25,350	4,900 = 16%

Predicted CO_2 Emission Reduction (**Including** Unregulated Emissions) **From Renewables alone**

The total estimated CO^2 emissions for the site: **(Kg CO2/Yr)** Figures taken from SAP 2009 + BRE Ene7 Calculator Tool (Nov.2010)	**Baseline**	**'Lean & Green'**	**Energy Reduction**
	29,900	25,350	4,550 = 15%

Predicted Energy Demand Reduction

The total estimated energy demand for the site (including unregulated energy demand): **kWh/Yr** Figures taken from SAP2009 NHER 2009 Assessment	**Baseline**	**'Lean & Green'**	**Energy Reduction**
	90,550	81,450	9,100 = 10%

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Code for Sustainable Homes

Code for Sustainable Homes Level 4

It is a requirement of Camden that this development achieves as a minimum Code for Sustainable Homes Level 4, with a mandatory requirement of 25% improvement in the Dwelling Emission Rate (DER) over the Target Emission Rate (TER) under Ene 1[2].

On the basis of the proposed building & services performance targets outlined within this report and draft SAP calculations prepared against planning drawings we consider the following potential credits under category 1 – Energy and Carbon Dioxide Emissions:

Potential Credits

Ene1 – Dwelling Emission Rate	3.7 credits	
Ene2 – Fabric Energy Efficiency	3.5 credits	
Ene7 – Low & Zero Carbon Technologies	1 credits	
Estimated Total	**8.2 credits**	**9.59%** **(1 credit = 1.17%)**

Summary of credits

Each unit will score different number of credits dependant on the type of unit; the above figures reflect block average figures allowable under AD L1A and CSH 2010.

It should be noted that in achieving the mandatory credits under Ene1, a balance between fabric enhancement and renewables will be required to attain credits under Ene2 and Ene7, i.e. in increasing building fabric and credits under Ene2 the requirement for PV reduces therefore losing credits under Ene7.

Generally more credits are attainable under Ene2 and therefore the Developer should consider 'Fabric First' when agreeing the detailed design.

Scheme Registration

The above credits have been assessed against CSH 2010 using sample SAP calculations undertaken against L1A 2010.

[2] Assuming scheme registered under CSH 2010

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Appendix 1 – Construction Specification Summary

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Appendix 2 – Carbon Emission Calculations

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Appendix 3 – Sample Typical TER/DER Worksheets + CSH Report

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Appendix 4 – PV Technical Literature