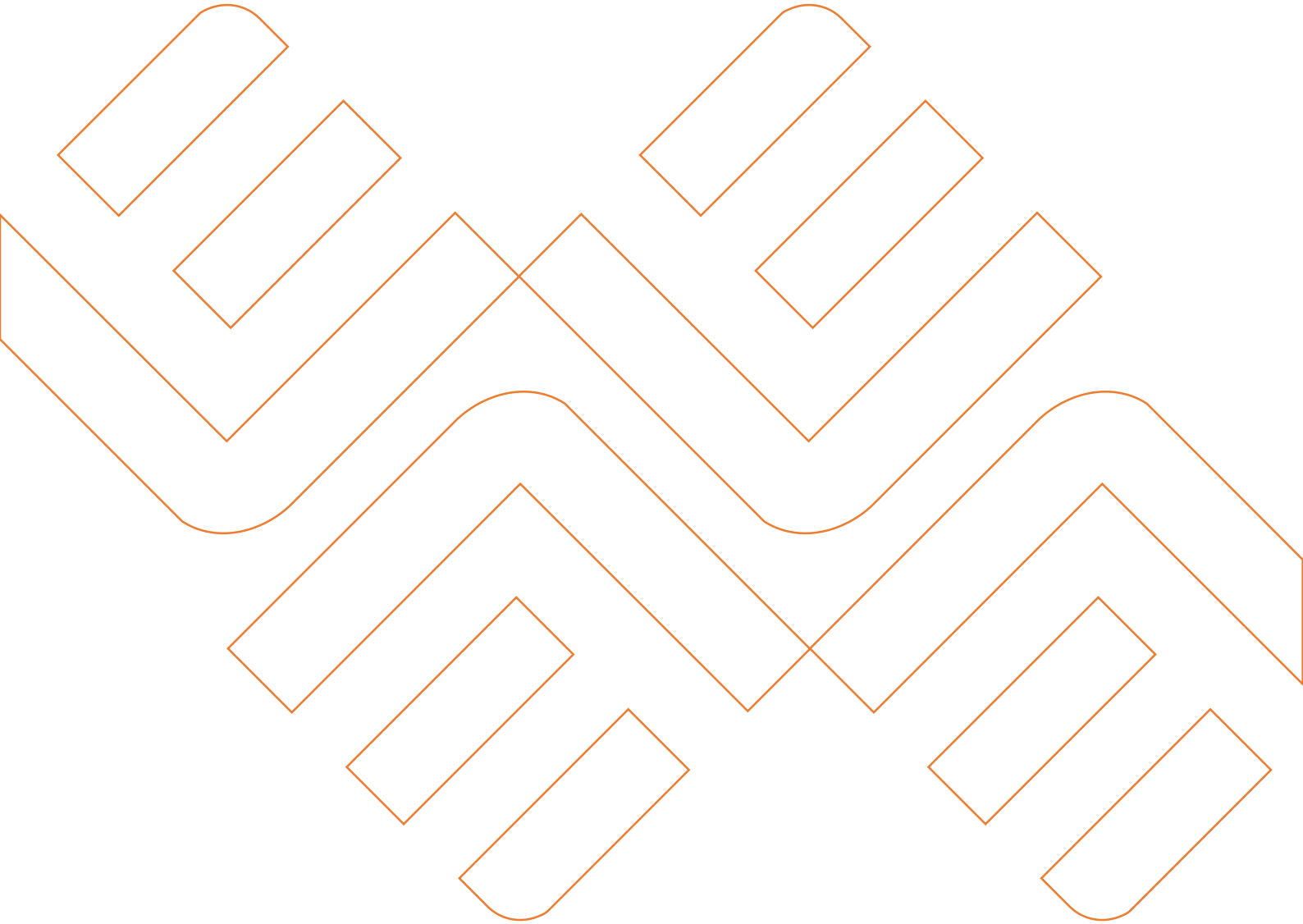
Energy/Sustainability Statement
Rochester Square Spiritualist Temple (RSST), London Borough of Camden

PROPOSED COMMUNITY SPACE AND RESIDENTIAL DEVELOPMENT

Issue 5



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Rev	Date	Details	Prepared by	Reviewed by	Approved by
0	17th Nov 16	First draft	MA	MF	MF
1	06th Nov 16	Updated scheme	MA	MF	MF
2	21st Dec 16	Minor text updates	MA	MF	MF
3	26th June 17	Minor text update	MA	MF	MF
4	09th Nov 17	Updated scheme	MA	MF	MF
5	01st Dec 17	Updated scheme	MA	MF	MF

Energy/Sustainability Statement
Issue 5

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Content

1. Executive Summary

The Rochester Square Spiritualist Temple scheme has been recently revised in response to the Camden Planning comments. Since, the new scheme has considerably reduced in size and the number of proposed dwellings. The current scheme consists of 5 flats (total gross internal area 317sqm) and commercial used space (church with total additional gross internal area of 208.4sqm).

Figure 1 – Indicative layout of the development

Table 1 – Development area breakdown

Area	Net Internal Area (m²)
Residential (area over 5 residential units)	**317.0**
Community use (area over part of the basement and ground floor)	**208.4**
Total:	**525.4**

This Energy/Sustainability Statement was prepared by Energylab Consulting ltd in support of the planning application arranged by NTA Planning for the Rochester Square Spiritualist Temple development, Camden, London.

The purpose of the Energy/Sustainability Statement is to demonstrate that climate change mitigation measures proposed for this development are in line with the relevant items listed within the Camden Council planning policies CS13, DP22 & DP23.

1.1 Exclusions

Energy Statement for the commercial part of the development:

Camden Planning Guidance Sustainability (CPG3) section 2.5 states that all new *developments involving 5 or more dwellings and/or 500sqm (gross internal) floor space or more are required to submit an **Energy Statement** which demonstrates how carbon dioxide emissions will be reduced in line with energy hierarchy.*

The community use part of the scheme is only 208.4sqm in area which is less than the 500sqm Camden Planning threshold for any non-residential development to produce Energy/Sustainability Statement as part of the planning application. However, the new development design proposal as a whole shall make the fullest contribution to minimising carbon dioxide emissions in accordance with the London Plan energy hierarchy and the current Building Regulations Approved Document Part L2A/L1A 2013.

BREEAM and Code for Sustainable Homes Sustainability Assessments:

Camden Planning Guidance Sustainability (CPG3) section 9 (Sustainability assessment tools) require *all new build dwelling to be designed in line with the Code for Sustainable Homes and any500sqm or more of non-residential floor space will need to be designed in line with BREEAM.*

The Code for Sustainable Home target set above is outdated and it is not a requirement for this development.

With regards to the non-residential part of the scheme, the proposed area is less than the 500sqm threshold, hence no BREEAM assessment is required.

1.2 Inclusions

This report shall demonstrate that the proposed Rochester Square Spiritualist Temple scheme (Residential Block) proposal shall be designed in line with the following:

Energy/carbon dioxide emissions reduction:

- Building Regulations Approved Document Part L1A 2013
- London Plan Energy Hierarchy and London Plan Planning Policy 5.2
- Camden Planning Guidance Sustainability (CPG3) section 6 (Renewable Energy)
- Camden Planning Guidance Sustainability (CPG3) section 3.2 (Dioxide Emissions Reduction)

Sustainability:

- Camden Planning Guidance Sustainability (CPG3) section 8 (Sustainable Use of Materials) Planning policies CS13 & DP22
- Camden Planning Guidance Sustainability (CPG3) section 7 (Water Efficiency)-Planning policies CS13 & DP23

1.3 Conclusions

Camden Planning Guidance Sustainability (CPG3) sections 3.2 & 6 and London Plan Policy 5.2 & 5.3 encourage new build housing to meet the Code for Sustainable Homes level 6 (zero carbon) by 2016 and that if this target could not be reached, any remaining CO2 emitted by the development will be offset by a fixed payment of £1,800 per tonne of CO2 emitted.

Camden Planning Guidance Sustainability (CPG3) section 7 require new developments to achieve 105 litres per person per day (Planning policies CS13 & DP23).

Camden Planning Guidance Sustainability (CPG3) section 8 require new developments to a sustainable use of materials (Planning policies CS13 & DP22).

This report demonstrates that the proposed scheme will comply with the energy, water and materials requirements highlighted in the Camden Council and London Plan planning polices listed above.

The design team are committed to achieve the water usage target highlighted above, sustainable use of materials and to incorporate all suitable energy saving measures into the proposed architecture and services design to meet the CO2 emissions reduction requirements highlighted in the Approved Document 2013 Part L1A, Camden Council planning policies CS13 & PD22 and the London Plan policy 5.2 & 5.3. Any remaining CO2 emissions towards the zero carbon target will be offset by a fixed payment of £1,800/tonne.

Energy (Camden Planning Guidance Sustainability (CPG3) sections 3.2 & 6 and London Plan policies 5.2 & 5.2): The calculations results (Please see appendices) demonstrate that the development will have the potential to achieve 33% reduction in CO2 emissions compared against the PartL1A 2013 target, in which, more than 25% reduction achieved from the onsite proposed renewable energy (PV). This has been achieved following The London Plan Energy Hierarchy three-step. The remaining CO2 emitted by the development towards the zero carbon target/Code level 6 will be offset by a fixed payment.

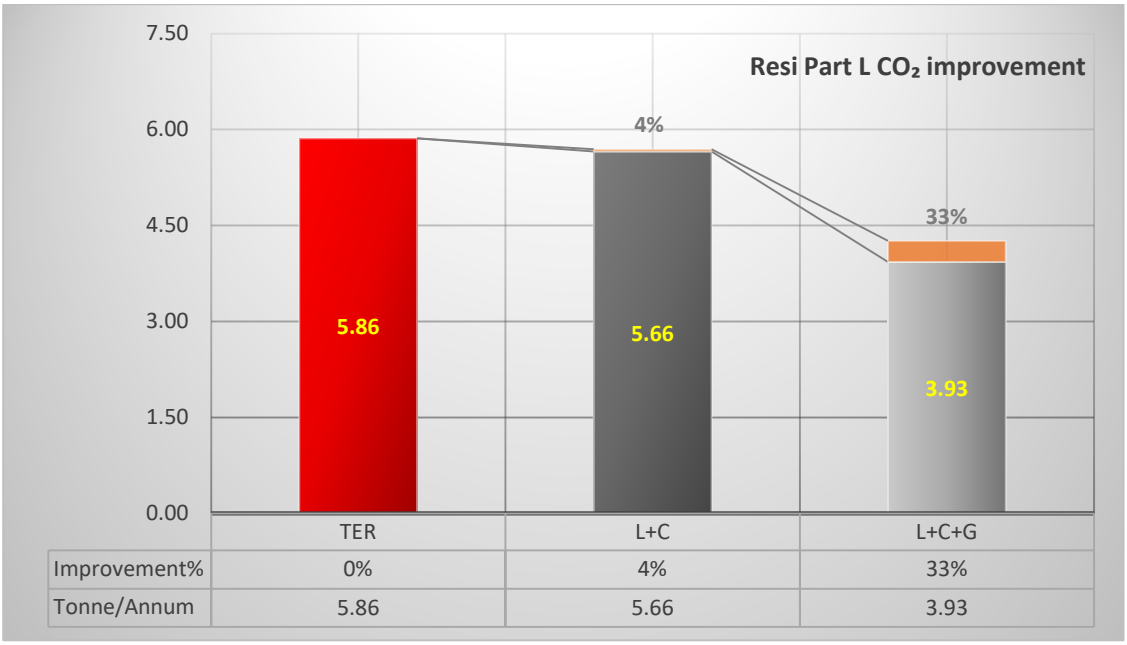


Figure 2 – Reductions in CO2 emissions against the TER as a results of the lean (L), Clean (C) and Green (G) approach

The potential CO2 emitted by the development after following the London Plan Energy Hierarchy three-step estimated to be 4.05 tonne/annum of CO2 emissions. To meet the zero carbon target/Code level 6 set by the Camden Council and the London Plan planning policies, a fixed payment of £1,800/tonne of CO2 emissions will be made against the remaining tonnes of CO2 emitted as demonstrated in the table below:

Table 2 – Potential cost of offsetting the remaining tonnes of CO2 emissions emitted by the development

Description	Value
Potential development tonnes of CO2 emissions emitted per annum	3.93 (Tonnes/Annum)
Offset payment per tonnes of CO2 emissions remaining	£1,800 (£/Tonne)
Total one offset payment:	£7,074 (£)

At this early stage of the project, it is deemed that the figure highlighted above is indicative and not final, this will be revised and updated accordingly as the design progress.

Water (Camden Council policy CS13 & DP23 and London Plan policy 5.15): It is anticipated, as part of the design, to specify water saving sanitary ware/equipment to all WCs and kitchens within the proposed units. The water use target of 105 litres per person per day will be achieved and confirmed at the detailed design stage.

Materials (Camden Council policies CS13 & DP23): It is anticipated, as part of the design, to minimise the use of resources through the choice of materials to limit the environmental impact of developments. This can be achieved by considering the sustainable (re)use of existing materials as far as technically possible when specifying materials for the Rochester Square Spiritualist Temple.

The Rochester Square Spiritualist Temple development will aim, where technically possible, to achieve 15-20% of the total value of materials specified/used to be derived from recycled and re used sources. This will relate to the WRAP Quick Wins assessments or equivalent.

2. Introduction

2.1 Aim

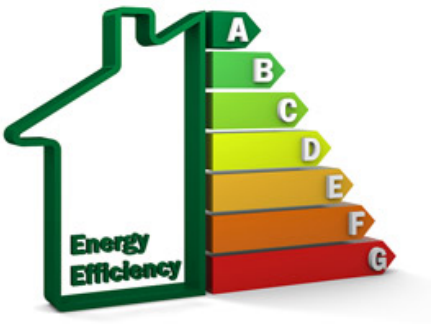
This Energy/Sustainability Assessment describes the proposed design strategies which have been adopted by the project team and included in the design of Rochester Square Spiritualist Temple to minimise carbon emission into the atmosphere and deliver a truly sustainable and 'low energy' development.

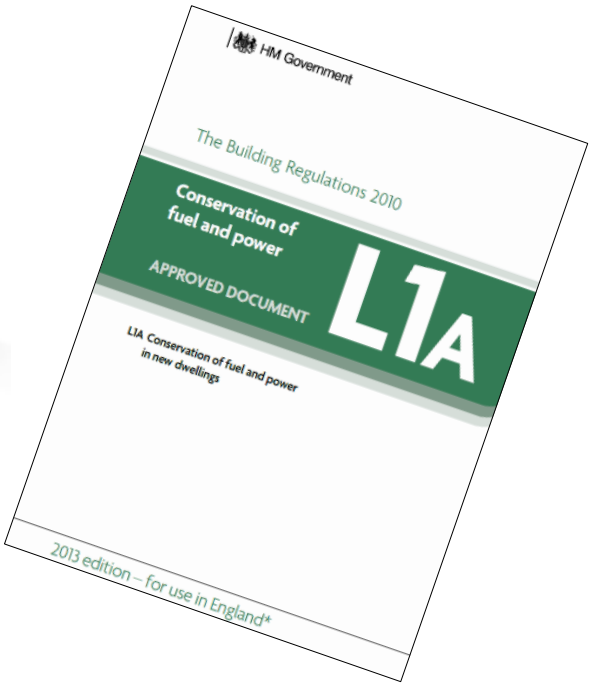
This report details the outcomes of the analysis undertaken for a number of energy efficient measures which are considered for the Rochester Square Spiritualist Temple development and recommends those which are most appropriate in terms of their environmental, technical and economic feasibility, and the subsequent resulting energy strategy.

2.2 Incentives

2.2.1 Part L1A

This approved document, *Approved Document L1A: Conservation of fuel and power in new dwellings*, supports the energy efficiency requirements of the building regulations. Regulation 2(1) of the Building Regulations defines the energy efficiency requirements as the requirements of regulations 23, 25A, 25B, 26, 26A, 28, 29 and 40 and Part L of schedule 1. This approved document take effect on April 2014 and it is for use in England.





2.2.2 Regional planning policy (London Plan Planning Polices 5.2, 5.3 & 5.15)

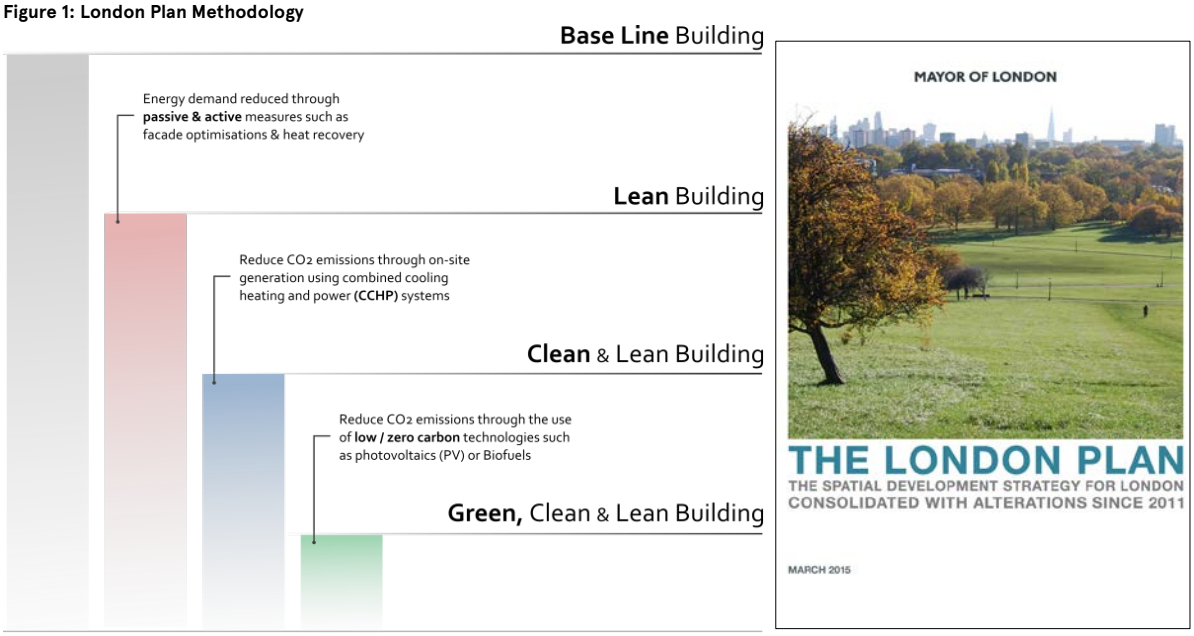
The assessments within this document are in line with polices 5.2, 5.3 and 5.15 (water use) which are listed within section 5 of *The London Plan March 2015* and the *Housing Standards Minor Alteration to the London Plan* document.

The Mayor of London published the current revision of the 'London Plan' in March 2015. This is the Spatial Development Strategy for Greater London. The Development Plans of all London Boroughs must eventually comply with the general requirements of the London Plan. The London Plan includes planning policies both for reducing energy consumption within buildings and, significantly, promoting the use of decentralised electricity generation and renewable energy. These policies cover the role of boroughs in supporting the Mayor's Energy strategy and the requirements of planning applications.

The London Plan recognises that energy efficiency should come before energy supply considerations and has suggested a simple strategy known as the Mayor's Energy Hierarchy. The system follows good practice in the design of low carbon buildings and comprises three distinct stages and order of application:

1. Use Less Energy (Be Lean)
2. Supply Energy Efficiently (Be Clean)
3. Use Renewable Energy (Be Green)

Figure 1: London Plan Methodology



The London Plan Policy 5.15 require new developments to minimise the use of mains water by:

- incorporating water saving measures and equipment
- designing residential development so that mains water consumption would meet a target of 105 litres or less per person per day

2.2.3 Local planning policy (Camden Council Planning Polices CS13, DP22&DP23)

The assessment within this document are in line with the following planning polices:

CS POLICY

CS13 – Tackling climate change through promoting higher environmental standards

Reducing the effects of and adapting to climate change

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;

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 th effects of, climate change.

The Council will have regard to the cost of installing measures to tackle climate chan 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 heatin or the potential for community heat and other uses with large hea

– the growth areas of Ki

DP POLICY

DP22 – Promoting sustainable design and construction

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.

and West Hampstead, King's Cross (see Map 5).

Camden's carbon reduction measures

The Council will take a lead in tackling climate change by:

j) taking m to reduce its own carbon emis

efficient technologies,

itigation and

DP POLICY

DP23 – Water

The Council will require developments to reduce their water consumption, the pressure on the combined sewer network and the risk of flooding by:

a) incorporating water efficient features and equipment and capturing, retaining and re-using surface water and grey water on-site;

b) limiting the amount and rate of run-off and waste water entering the combined storm water and sewer network through the methods outlined in part a) and other sustainable urban drainage methods to reduce the risk of flooding;

c) reducing the pressure placed on the combined storm water and sewer network from foul water and surface water run-off and ensuring developments in the areas identified by the North London Strategic Flood Risk Asses and shown on Map 2 as being at r surface water flooding are desig cope with the potential flooding

d) ensuring that developments for upstream and downstrea groundwater flood risks in historic underground stre to have been present; a

d) encouraging the provis and efficient water te

Camden Core Strategy 2010-2025

Local Development Framework

Camden

Camden Development Policies 2010-2025

Local Development Framework

Camden

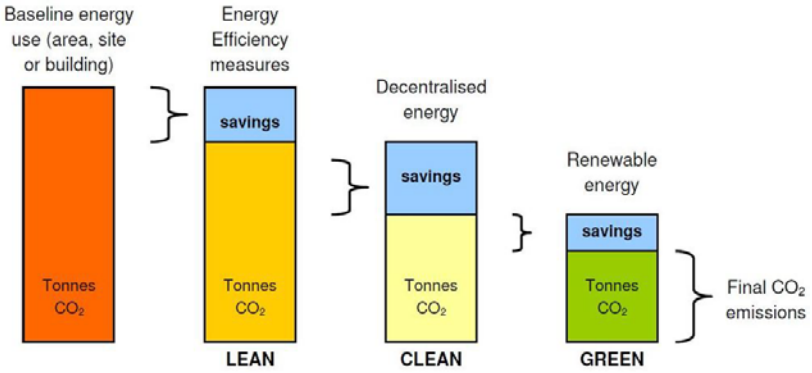
3. Assessment Methodology

3.1 Methodology

The energy assessment will clearly outline the design team's commitments in terms of CO2 savings and measures proposed.

For the purpose of this report the predicted annual energy requirements for the proposed residential building and its associated CO2 Emissions were assessed in accordance with the current Building Regulations Approved Document Part L1A 2013 utilising the government's Standard Assessment Procedure (SAP). To assess this, we have utilised an accredited SAP software (Elmhurst Energy Systems SAP2012 Calculator version 4.04r08).

The energy strategy for this development follows The London Plan Energy Hierarchy three-step:



LEAN (L): Will first reduce the overall energy demand for the development and hence reduce carbon dioxide emissions following the energy hierarchy. The measures will include:

- Improving the building fabric.
- Use of low energy lighting
- Use of high efficiency condensing gas boilers and controls
- Use of efficient services

CLEAN (C): The feasibility study showed that there is no suitable district heating networks/CHP Plant within close proximity to the site. Therefore, it is proposed that high efficiency individual gas condensing boilers are used as the main source of heating in each individual residential unit.

GREEN (G): A number of renewable energy sources were considered to further reduce the carbon dioxide emissions, including PV panels, solar hot water panels, wind turbines and air source heat pumps. The analysis, which took account of spatial restrictions and over-shading from surrounding buildings as well as potential CO2 savings, concluded that PV solar panels are the only feasible source of renewable energy. PV panels are proposed to serve each individual residential unit.

Both passive and active energy efficiency measures are considered, as well as investigating the viability of incorporating a decentralised energy centre as the main source of energy for development. This will be analysed further at detailed design stage.

The residential area weighted regulated CO2 emissions and reductions were expressed in tonnes per annum for all different stages of the energy hierarchy.

3.2 The Building

The proposed redevelopment of the site retains the existing church building, with the exception of the single storey ancillary wing to the rear. The floor space from the rear wing will be reintroduced into the main church space through a mezzanine, as part of the buildings overall refurbishment. The ground floor of the existing church space will continue to be used for community use accommodating a large single useable space.

To the rear, residential accommodation will form the remainder of the development, accommodating 5 self-contained flats over 3 floors (two storeys, plus basement level – LGF, GF and 1st) comprising 1 x 1 and 4 x 2 bed units. Every unit has its own private balcony / courtyard space.

Table 3– Building Areas Breakdown

Area	Net Internal Area (m²)
Residential (area over 5 residential units)	317.0
Community use (area over part of the basement and ground floor)	208.4
Total:	**525.4**

3.3 Accredited Software– SAP Energy Software

The energy and the associated CO_2 emissions calculations were carried out using the SAP Energy Software ((Elmhurst Energy Systems SAP2012 Calculator version 4.04r08) which is an approved software for the Standard Assessment Procedure (SAP) calculations.

The Standard Assessment Procedure (SAP) is the UK Government National Calculation Methodology for assessing the energy performance of new dwellings under the European Directive on the Energy Performance of Buildings (EPBD).

This approach has been used to carry out the energy and CO2 emissions calculations that are related to the residential part of the building only.

4. Energy & CO2 assessment

4.1 Design Criteria

4.1.1 Residential apartments

Built Form:

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 the dwelling
- Thermal insulation of 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
- Energy for space cooling, if applicable
- Renewable energy technologies

The calculation is independent of factors related to the individual characteristics of the household occupying the dwelling, for example:

- Household size and composition;
- Ownership and efficiency of particular domestic electrical appliances;
- Individual heating patterns and temperatures.

Except where the dwelling has a fixed air conditioning system, calculations are not affected by the geographical location.

Material Construction:

The façade has assumed to be better than the recommended values listed within the Building Regulation Approved Document Part L1A 2013.

Table 4: U values for the current assumptions, the Part L1A standards and the proposed design

Thermal performance of the facade (U-Values) in W/m². k		
Elements	**Part L 2013 limiting values**	**Rochester Square Spiritualist Temple**
Roof	0.20 W/m². k	0.13 W/m². k
Wall	0.30 W/m². k	0.15 W/m². k
Floor	0.25 W/m². k	0.13 W/m². k
Windows U value	2.00 W/m². k	1.2 W/m². k
Windows g value		0.64
Air permeability	10 m³/h.m² @ 50Pa	4.8 m³/h.m²@ 50Pa
y-value		0.04 W/ m². k

Systems:

At this early stage of the project it is anticipated that the space heating and domestic hot water (DHW) requirements shall be provided to each unit individually via an efficient condensing boiler. The proposed individual boiler(s) will be specified to be more efficient than the recommended efficiencies listed within the *HM Government Domestic Building Services Guide 2013,* same will be applicable for lighting. The apartments will be all naturally ventilated. All wet rooms will have a local extractor fan.

4.2 Energy Saving Opportunities

4.2.1 Lean – Reducing the demand for energy

The heat loss of different building elements is dependent upon their U-value. The lower the U-value, the better the level of insulation of a particular element.

The anticipated design will aim to reduce the need for energy as a first priority. This can be achieved by improving the energy performance of the façade.

In the residential part of the development, the major part of the energy consumption will be related to space heating. Hence the design team have maximised the performance of the façade to exceed the recommended efficiencies set in Part L1A 2013. This approach deemed to be the most efficient way to reduce the amount of heat escaping into the atmosphere and as a result will reduce the requirement for energy to heat the space.

Windows have been specified to have the optimum balance between the U value and g value to increase the amount of sun light into the space, hence reducing the need to use artificial lighting, without compromising the thermal performance of the window.

Please refer to table 4 listed above for more information on targeted façade efficiencies.

The residential units will be naturally ventilated with potential for cross ventilation utilising the openable windows which, in this type of building use, deemed to be efficient and easily controlled by the occupants as a mean to avoid overheating and to ensure that the thermal comfort, in relevant areas, will be reached.

Lights fittings will be all low energy/LED to minimise energy use.

4.2.2 Clean – Supply energy cleanly (Centralised system)

It is not possible to connect to any existing CHP network as the proposed redevelopment is outside network coverage.

Also, it is not considered economically or technically feasible to incorporate a communal heat system (CHP) for a relatively small scale development as it will be difficult to secure sufficient base load to make the CHP a viable option.

The space heating and hot water for the residential units will be provided by high efficiency individual gas condensing boilers.

4.2.3 Green – Incorporate renewable technologies

The current version of the London Plan contains a presumption that the development will seek to reduce carbon dioxide emissions through the use of on-site renewable energy generation where feasible.

The plan also recommends the following renewable energy technologies are likely to offer the best potential in London buildings in terms of environmental, technical and economic feasibility:

- Biomass heating
- Renewable energy from waste
- Photovoltaic
- Solar hot water heating
- Wind turbines
- Ground Source Heat pumps

Biomass Heating – Not Suitable

A common and sustainable form of biomass is wood in the form of small chips or pellets. These are produced as a waste product in the forestry industry. The fuel is burnt in specially designed boilers with high efficiency filters on the exhaust so that very low particulate emissions are achieved.

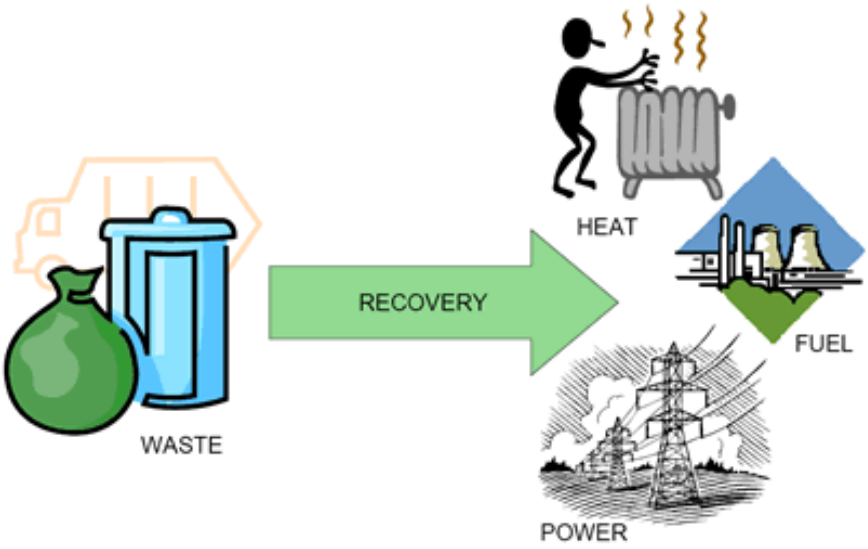
Although carbon dioxide is emitted in the exhaust gas, this originated from the atmosphere and stored within the tree by photosynthesis. As such, it is considered a 'carbon neutral' fuel. However, some fossil fuel will be expended in producing and transporting biomass which is why it has some associated carbon emission. The building regulations specify an emission rate one-seventh that of natural gas.

The key issues with biomass are fuel handling and storage, fuel availability, emissions, Air quality and ash disposal.

Air quality is seen to be an issue in the London. Due to the high particulate matter (PM) and nitrogen oxide (NOx) emissions and the potential nitrous oxide (N2O) biomass installations may not meet the London`s air quality requirements. Add to that the difficulties in delivering the fuel due to the narrow and residentially busy roads for the large biomass fuel transport Lorries. **Therefore, biomass / bio-gas heating is not appropriate for this development.**

Renewable Energy from Waste – Not Suitable

Generating energy from waste would **not be appropriate for this development due to the relatively low levels of combustible waste produced on site.**



Photovoltaic - Suitable

Photovoltaic cells directly convert sunlight into electrical current using semiconductors. The output of a cell is directly proportional to the intensity of the light received by the active surface of the cell. The location and positioning of PV cells is therefore important in achieving acceptable performance. Exposure to sunlight causes electricity to flow through the cells; direct sunlight produces the greatest output.

PV technology has been proposed to provide renewable energy within the residential part of the development.

It is not decided yet on what the PV panels will serve. For the purpose of the calculations it has been assumed that PV installation shall serve the whole block. It is assumed that the site is served by Sharp PV panels model ND-R230A5 installed horizontally on the brown roof space. The predicted kWp of the PV installation is 3.9 and the annual output is estimated to be 3312 kWh/annum. The PV panels will utilise the available roof space as shown below:

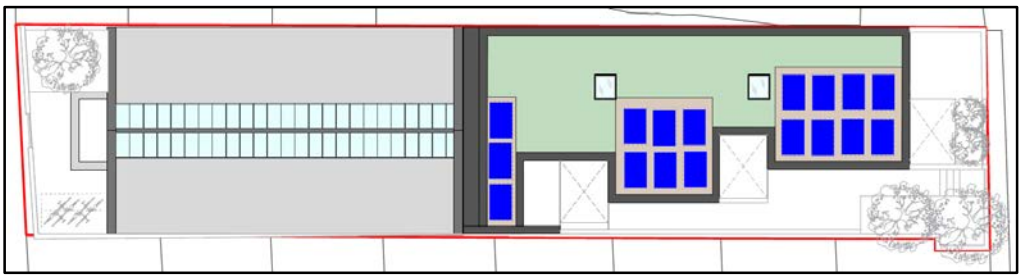


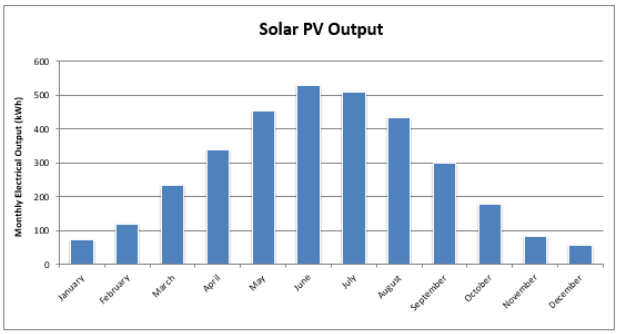
Figure 3 – Indicative layout of PV panels on the roof

The estimated KWp and the predicted annual output from the PV is shown below:

Photovoltaics

Choose Panel:	Reference Number	54		
	Manufacturer	Sharp		
	Model	ND-R230A5		
Technical Data:	Open Circuit Voltage at STC	36.40	V	*Voc_STC*
	Short Circuit Current at STC	8.41	A	*Isc_STC*
	Rated (Peak) Power	230	W	*Pmax*
	NOCT	0	deg.C	*NOCT*
	Temperature Coefficient of Voltage	0.0	mV/deg.C	*CtV*
	Temperature Coefficient of Current	0.0	mA/deg.C	*Ctl*
	Fill Factor	0.7513		*FF*
	Panel efficiency	14.0%		
	Area per Panel (Gross)	1.64	m2	
Panels:	Number of Panels	17	Panels	*No_PV*
	Total Area of Panels	27.9	m2	*Apv*
	Inclination of Panel	0	deg	
	Orientation of Panel	South-East		
CO2:	Carbon Intensity of Grid Electricity	0.517	kgCO2/kWh	*Cgrid*
	Annual output from PV	3312	kWh	
	CO2 displaced per year	1,712	kg	

Summary:	**Total Array Rated Output**	**3.9 kWp**
	Annual output from PV	**3,312 kWh**
	CO2 Displaced per year	**1,712 kg**



Solar Hot Water Panels (SHW) – Not Suitable

A solar thermal array converts sunlight into heat. The location and positioning of the array is therefore critical to achieving acceptable performance. Direct sunlight produces the greatest output, but heat is produced even on overcast days. Typically, a solar thermal system could potentially provide 40%-50% of the annual hot water demand, depending on available roof space and detailed system design.

There will be no sufficient roof space to install this technology alongside the PV panels which are deemed to offer more energy saving. Hence, **Solar Hot Water Panels are not appropriate for this development**

Wind Turbines – Not Suitable

Wind turbines produce electricity directly from the energy in wind. This is then fed into the buildings electrical system via control gear.

Two types of wind turbine are available, horizontal axis and fixed axis. The former tend to be noisy and produce vibration. The latter are quieter in operation and more suited to installation on buildings but are generally less efficient and more expensive.

Recent measurements of a wind turbine on a London building has confirmed reports that wind turbulence around buildings greatly reduces energy output – typically half that suggested by manufacturers' literature. **Due to restrictions on building heights and the predicted low average wind speed for the site the installation of wind turbines are not appropriate for this development.**

Ground Source Heat Pump GSHP – Not Suitable

Ground Source Heat Pumps (GSHP) involves the recovery of low grade heat from the ground or the disposal of heat into the ground, utilising heat pumps.

Surveys will be required to identify the potential for sufficient surface area for bore holes/horizontal trench, and to investigate the effects on any existing external services. Boreholes can be as deep as 100m while horizontal trench can be 1m – 2m deep.

However, for this development there is no available ground area for the horizontal trench and boreholes, and hence ground source heat pumps have not been proposed for this development.

4.3 Energy Savings Measures Summary

Hierarchy Stage	Energy savings measures	Potential % CO2 Emissions Reduction
Lean & Clean (Active & Passive Measures)	Improving U-values, Air permeability improvement, G value & y-value Energy saving light fittings and Lighting Control High Efficiency Low NOx Boiler for individual apartments	4%
Green (Renewables)	Photovoltaics technology proposed to provide renewable energy to the apartments	29%
	Total Emissions Reduction	33%

Table 5 – Reductions in CO2 emissions related to the Lean, Clean and green approach

5. Water Efficiency

The Camden Council planning policy DP23 and the London Plan Policy 5.15 (water use) requires all new residential development to demonstrate that the development is capable of achieving a maximum internal water use of 105 litres per person/day, with an additional 5 litres person/day for external water use.

This will be incorporated into the design and the sanitary ware/fittings selection at the detailed design stage to ensure that this target is achieved.

The above target can be achieved though specifying all or some of the following water saving fittings: a low and water saving dual flush WC, aerated showerhead, flow regulating access valve for showers, water saving flow regulator for basin, water efficient lever operated Monobloc tap, water efficient Monobloc kitchen tap and water saving tub.

6. Materials (Sustainable use of materials)

The Camden Council planning policy CS13 & DP22 encourage developments to be sustainable through the choice of appropriate materials and the use of recycled and renewable buildings materials.

The design team is committed to minimise the use of resources through the choice of materials to limit the environmental impact of developments. This can be achieved by considering the sustainable (re)use of existing materials as far as technically possible when specifying materials for the Rochester Square Spiritualist Temple development.

The design will consider the following measures:

- Managing existing resources;
- Specifying materials using the Building Research Establishment's Green Guide to Specification;
- Ensuring that materials are responsibly sourced;
- Minimising the harmful effects of some materials on human health; and
- Ensuring that specified materials are robust and sensitive to the building type and age.

The Rochester Square Spiritualist Temple development will aim, where technically possible, to achieve 15-20% of the total value of materials specified/used to be derived from recycled and re used sources. This will relate to the WRAP Quick Wins assessments or equivalent.

7. Conclusion

This report demonstrates that the proposed development will comply with the water, materials and energy requirements highlighted in the Camden and London Plan planning polices listed in sections 2.2.2 & 2.2.3 of this report.

The design team are committed to achieving the water usage and sustainable use of materials targets. They will also incorporate all suitable energy saving measures into the proposed architecture and services design to meet the CO2 emissions reduction requirements highlighted in the Approved Document 2013 Part L1A, Camden Council planning policies CS13 & PD22 and the London Plan policy 5.2 & 5.3. Any remaining CO2 emissions towards the zero carbon target will be offset by a fixed payment of £1,800/tonne.

Appendices

The Residential Building Regulation Compliant document

BLOCK COMPLIANCE
Calculation Type: New Build (As Designed)

Design SAP
elmhurst energy

Block Reference	16342	Issued on Date	09/11/2017
Block Name	Rochester Sq		
Surveyor	Mohanad Alnaimy, Tel: 020 3752 9608	Surveyor ID	01
Client	Urbanlab, 01		

Block Compliance Report - DER

Block Reference: 16342		Block Name: Rochester Sq		
Property-Survey Reference	Multiplier	Floor Area (m^2)	DER ($kgCO_2/m^2$)	TER ($kgCO_2/m^2$)
01-Unit 1	1	75.2	17.93	19.02
02-Unit 2	1	72.7	14.41	16.13
03-Unit 3	1	70.7	17.94	17.78
04-Unit 4	1	37.2	22.15	22.31
05-Unit 5	1	61	-9.16	19.25
Totals:	5	316.8	63.27	94.50
Average DER = 12.40 $kgCO_2/m^2$			PASS	33% Reduction in CO2 emissions
Average TER = 18.51 $kgCO_2/m^2$				

Block Compliance Report - DFEE

Block Reference: 16342		Block Name: Rochester Sq		
Property-Survey Reference	Multiplier	Floor Area (m^2)	DFEE ($kWh/m^2/yr$)	TFEE ($kWh/m^2/yr$)
01-Unit 1	1	75.2	48.33	55.16
02-Unit 2	1	72.7	32.76	39.90
03-Unit 3	1	70.7	42.22	46.75
04-Unit 4	1	37.2	53.26	52.83
05-Unit 5	1	61	49.78	51.66
Totals:	5	316.8	226.34	246.30
Average DFEE = 44.25 $kWh/m^2/yr$			PASS	
Average TFEE = 48.83 $kWh/m^2/yr$				

For further information, please contact:

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