



Parker House

Planning & Conservation Area Consent Applications

SD5: Energy / Renewable Energy Statement

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sustain

Low carbon buildings



Energy Statement for Parker Street House

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1.0 Executive summary

The proposed development at Parker Street House consists of 43 dwellings. The facade is existing with the remainder of the construction being new build. This energy statement sets out how the proposed development has been designed to address the requirements set out in the London Borough of Camden (LBC) guidance, CPG 3 Sustainability.

The figures presented are for dwelling 29 which we believe to be the worst case. We will also be modelling all the other dwellings and assessing them against the CPG3 criteria to confirm this.

In line with the guidance in CPG 3 the following steps in the energy hierarchy have been followed.

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

The targets in CPG 3 are to reduce carbon dioxide emissions by 25% (including non-regulated loads) and to target a 20% reduction from on site renewable energy technologies.

The key results for the dwelling chosen as the worst case are:

- The London Borough of Camden CPG3 guidance has been followed.
- A 24% reduction in carbon dioxide emissions over the baseline (which includes non-regulated loads) has been achieved. This equates to a 36% improvement over Part L1a Building Regulations Target Emission Rate.
- A 5% reduction in carbon dioxide emissions from renewable energy technologies (solar photovoltaics) has been achieved. It was not feasible to achieve a higher percentage reduction from renewable energy technologies due to the site constraints.



2.0 Planning requirements

In line with the guidance in CPG 3 the following steps in the energy hierarchy have been followed.

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

In addition the energy statement demonstrates how the proposed development has been designed to address the following requirements set out in CPG 3.

Policy 5.2 Minimising carbon dioxide emissions of the Draft Replacement London Plan introduces a carbon dioxide reduction target for new development to make a 25% improvement on the current 2010 Building Regulations:

- 2010 – 2013 25 per cent
- 2013 – 2016 40 per cent
- 2016 – 2031 zero carbon

(this must include non regulated loads)

Developments are to target a 20% reduction in carbon dioxide emissions from on-site renewable energy technologies.

3.0 Development details

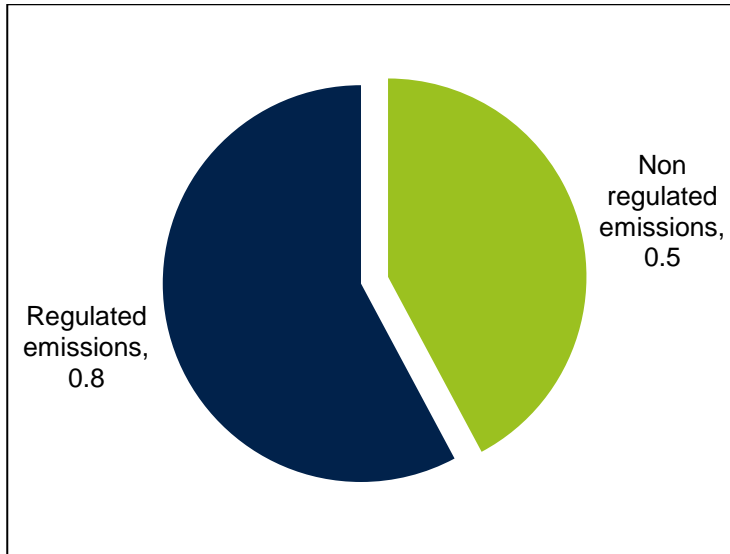
The proposed development at Parker Street House consists of 43 dwellings. The facade is existing with the remainder of the construction being new build. This energy statement presents the energy efficiency of dwelling 29 against Section 3 of CPG 3.

4.0 Baseline

The proposed development is classified as domestic under Building Regulations and hence assessed using SAP methodology for Part L. As per the LBC guidance the baseline has been modelled as a dwelling that meets Building Regulations **plus** the non-regulated emissions from small power loads. These non-regulated loads equate to 1070kWh (provided by the SAP software). This adds 0.5 tonnes or 73% to the annual carbon footprint from Building Regulations/Part L regulated emissions. The pie chart below shows this. The table below the pie chart shows the total baseline carbon emissions and the Building Regulations dwelling emission rate.



Contribution of non-regulated emissions to carbon footprint



Baseline carbon emission result

	CO ₂ footprint per annum (tonnes)	CO ₂ savings per annum (tonnes)	Cumulative CO ₂ savings per annum (tonnes)	Percentage reduction from baseline
Baseline - Building Regulations 2010 Part L compliant plus non-regulated energy	1.72	0.00	0.00	0%

Building Regulations compliant dwelling emission rate result

	Dwelling Emission Rate (DER) kgCO ₂ /m ²	% improvement over Part L
Building Regulations 2010 Part L (TER)	15.24	-



5.0 Be lean (potential for demand reduction)

Under the 'be lean' scenario the thermal performance of the development was improved by improving the U values so that they meet or exceed LBC best practice with the exception of the roof. The following tables show the demand reduction measures made and the reductions achieved by these measures.

Demand reduction measures

	LBC best practice	Be lean scenario
Air tightness (m ³ /h/m ²)	3	3
External wall U-value (W/m ² K)	0.2	0.18
Roof U-value (W/m ² K)	0.13	0.15
Floor U-value (W/m ² K)	0.2	0.18
Doors solid U-value (W/m ² K)	1	1
Doors glazed U-value (W/m ² K)	1.5	1
Windows front U-value (W/m ² K)	1.5	1.4
Windows rear U-value (W/m ² K)	1.5	1.1

Be lean carbon emission result

	CO ₂ footprint per annum (tonnes)	CO ₂ savings per annum (tonnes)	Cumulative CO ₂ savings per annum (tonnes)	Percentage reduction from baseline
Baseline - Building Regulations 2010 Part L compliant plus non-regulated energy	1.72	0.00	0.00	0%
BE LEAN After energy demand reduction	1.69	0.03	0.03	2%

Be lean dwelling emission rate result

	Dwelling Emission Rate (DER) kgCO ₂ /m ²	% improvement over Part L
Building Regulations 2010 Part L (TER)	15.24	-
BE LEAN After energy demand reduction	14.86	2%



6.0 Be clean (potential for communal heating and CHP)

The proposed development has a CHP unit linked to a communal wet heating system (i.e. a building wide network).

The table below summarises the carbon dioxide emissions savings achieved in the 'be clean' scenario.

Be clean carbon emission result

	CO ₂ footprint per annum (tonnes)	CO ₂ savings per annum (tonnes)	Cumulative CO ₂ savings per annum (tonnes)	Percentage reduction from baseline
Baseline - Building Regulations 2010 Part L compliant plus non-regulated energy	1.72	0.00	0.00	0%
BE LEAN After energy demand reduction	1.69	0.03	0.03	2%
BE CLEAN After CHP	1.37	0.32	0.35	20%

Be clean dwelling emission rate result

	Dwelling Emission Rate (DER) kgCO ₂ /m ²	% improvement over Part L
Building Regulations 2010 Part L (TER)	15.24	-
BE LEAN After energy demand reduction	14.86	2%
BE CLEAN After CHP	10.67	30%

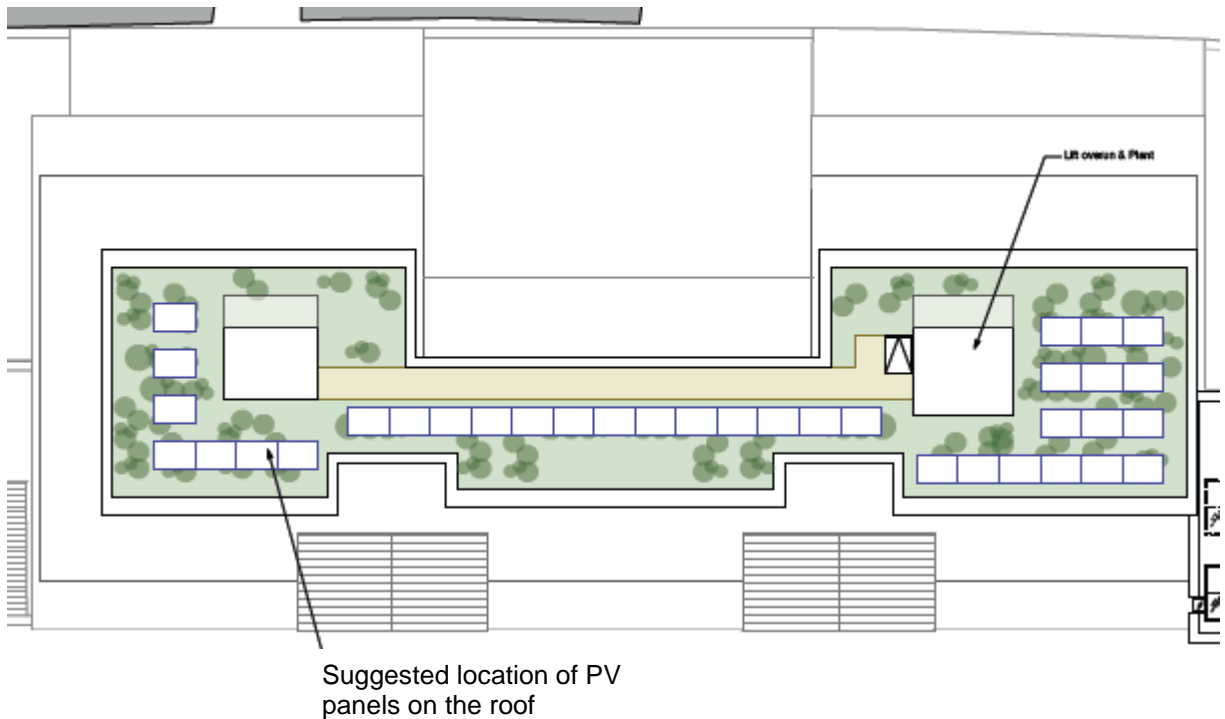
7.0 Be green (potential for renewable energy)

All sources of renewable energy technology were considered for the development. Solar photovoltaic panels were deemed to be the only suitable technology.

7.1 Technologies included

56m² of horizontal solar photovoltaic (PV) monocrystalline panels will be located on the roof of the development. The proposed location of the PV is shown below. The panels are mounted horizontally in line with the LBC planning guidance.





7.2 Technologies discounted

The following renewable energy technologies were deemed to be not suitable.

A ground source heat pump was considered but there is insufficient land area to lay horizontal coils. Vertical coils would require boreholes but there is very limited room for these and drilling them may disturb the existing facade which is to be retained.

A communal biomass boiler was considered but it would be difficult to manage its operation at a building consisting of private residences. A CHP unit was chosen in preference.

Solar thermal panels would be difficult to integrate into the hot water system as the pipe runs for these would be very long from the roof to the basement plant room and require a lot of pump energy. It was decided that it would be preferable to use the roof area for solar photovoltaics.

The windspeeds in London are too low for small scale wind turbines to perform satisfactorily.

The tables below summarise the carbon dioxide emissions savings after renewable energy measures are taken into account. They show the dwelling achieves a 5% reduction in carbon dioxide emissions from renewable energy. They also show the dwelling achieves a 24% reduction over the baseline (which includes non-regulated loads) which equates to a 36% improvement over Part L.



Be green carbon emission result

	CO ₂ footprint per annum (tonnes)	CO ₂ savings per annum (tonnes)	Cumulative CO ₂ savings per annum (tonnes)	Percentage reduction from baseline
Baseline - Building Regulations 2010 Part L compliant plus non-regulated energy	1.72	0.00	0.00	0%
BE LEAN After energy demand reduction	1.69	0.03	0.03	2%
BE CLEAN After CHP	1.37	0.32	0.35	20%
BE GREEN After renewable energy	1.30	0.07	0.42	24%
Percentage contribution from renewable energy	5%			

Be green dwelling emission rate result

	Dwelling Emission Rate (DER) kgCO ₂ /m ²	% improvement over Part L
Building Regulations 2010 Part L (TER)	15.24	-
BE LEAN After energy demand reduction	14.86	2%
BE CLEAN After CHP	10.67	30%
BE GREEN After renewable energy	9.79	36%



8.0 Conclusion

The key results for the dwelling chosen as the worst case are:

- The London Borough of Camden CPG3 guidance has been followed.
- A 24% reduction in carbon dioxide emissions over the baseline (which includes non-regulated loads) has been achieved. This equates to a 36% improvement over Part L1a Building Regulations Target Emission Rate.
- A 5% reduction in carbon dioxide emissions from renewable energy technologies (solar photovoltaics) has been achieved. It was not feasible to achieve a higher percentage reduction from renewable energy technologies due to the site constraints.

