32 Granville Road
Tunbridge Wells
Kent TN1 2NX

Tel: 01892 263 685
info@energy-test.co.uk
www.energy-test.co.uk

ENERGY STATEMENT

for a proposed conversion to dwelling at Ryland Road, Kentish Town, London.

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1. General

This energy statement has been prepared by Energytest Ltd in support of a planning application for a change of use to a dwelling at Ryland Road, Kentish Town, London. The statement provides an initial assessment of the overall energy requirements for the proposed development using approved standard calculation methods along with potential reductions via improved fabric efficiency and renewable energy supply.

2. Planning Condition

Prior to commencement of the development, an Energy Statement shall be submitted which demonstrates how Carbon Dioxide emissions will be reduced in line with the energy hierarchy.

3. Development

The proposed development compromises the conversion of a 3 storey office to a dwelling. The construction will meet the requirements of the 2010 version of Approved Document L1B of the Building Regulations (2000).

4. Baseline Energy Demand

The baseline energy demand for this development has been calculated based on the minimum fabric U-Values of Approved Document L1B and electric heating and electric hot water. There is currently no gas supply on site. The following baseline energy demand has been calculated:

Energy Consumption by End Use (kWh)

Heating (Electric)	Water heating	Pumps, fans and electric keep-hot	Lighting	Total	DER ($KgCO_2/m^2/year$)
8,380	2,095	0	705	11,180	30.94

5. Energy Efficiency Measures

Research by the Building Research Establishment (BRE) has found improvement to building fabric and services to be the most cost effective way of reducing energy consumption.

Results of the study indicated that:

- The cost per tonne of achieving a 1% reduction in CO_2 emissions with renewables was approximately 4 times higher than building fabric improvement; and
- Combining improvements to building fabric and services to achieve approximately a 20% reduction in energy use was cheaper per tonne of CO_2 emissions reduced than by achieving a 10% reduction by using renewables alone.

Following this research BRE have concluded that improvements to building fabric and services should be implemented first with additional renewable energy installations to follow. Enhancing the thermal performance of the building envelope helps to future-proof the structure and also yields the greatest CO_2 savings. Adding renewable technologies will then yield maximum emissions reductions with lower long-term costs for the developer.

The following energy-efficient design measures are proposed:

i. Enhanced fabric U-values:
   a. External walls – 0.25 W/m^{2}K
   b. Floor – 0.16 W/m^{2}K
ii. Design air permeability rate of 6m^3/h/m^2.

Recalculating the energy demand with the above values gives:

Energy Consumption by End Use (kWh)

Heating (Electric)	Water heating	Pumps, fans and electric keep-hot	Lighting	Total	DER ($KgCO_2/m^2/year$)
7,475	2,095	0	705	10,275	28.44

It can be seen that by increasing the fabric efficiency and air tightness, the energy demand and CO_2 emissions have been reduced by ~8% above the baseline.

6. Renewable and/or Low Carbon Energy Sources

6.1. Air Source Heat Pump with MVHR

Option:

Central heating and hot water to be provided by an electrically powered Air-to-Water Heat Pump with whole house mechanical extract heat recovery (NIBE F370 or equivalent).

Energy Consumption by End Use (kWh):

Heating (ASHP)	Water heating (ASHP)	Pumps, fans and electric keep-hot	Lighting	Total	DER (KgCO2/m2/year)
5,850	890	183	700	7,623	21.11

It can be seen that by utilizing an Air Source Heat Pump and MVHR, the predicted energy requirement and CO_2 emissions of the dwelling have been reduced by a further26%, with a total a reduction in CO_2 emissions above the baseline of 31.8%.