

APT

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Sustainability Report for:

**New Dwelling at
104 Bekerley Avenue
Reading
RG1 6HY**

Carried out by:

**John Young BSc
Hons OCDEA
13th February 2023**

Introduction

This is a Sustainability Assessment, for a New Dwelling at 104 Bekerley Avenue, Reading, Berkshire, RG1 6HY

The proposal is to construct newly efficiently designed dwellings which would exceed the current building regulations and will be airtight and thermally efficient.

Sustainability Statement

Thermal Elements

This property achieves well below the target U-values as in Approved Document L1A, please see below :

Walls To achieve 0.19
Floor To achieve 0.11
Roof – insulated ceiling – To achieve 0.10
Roof – Slope – To achieve 0.11
Windows To achieve – 1.40
Doors To achieve 1.40
Air Leakage 5m³/hour/m²/

Passive design features

The proportion of glazing on each elevation allows solar gains through all orientations of the proposed dwelling (see SAP worksheet showing solar gains).

Water Efficiency Usage

Water usage will be within the permitted usage of 110 litres of water per person per day.

Building Materials

These will be locally sourced where possible, and to be sympathetic to the area.

Healthy Enviroment

Consideration has been taken into account for natural daylight where possible.

Space has been allocated for private parking and adequate drying space.

Environmental Standards

This assessment has been carried out by an OCDEA using Stroma Technology software as approved by the BRE. These dwellings achieve Level 3 of the Code for Sustainable Homes.

Renewables

On this scheme there is to be 4kwp of Solar Photovoltaics. The dwelling is achieving above the requirement of Part L 2013 Building Regulations of 66.70%.

Energy Condition

SAP Assessment Minor - Design Stage (To Be Approved)

No development shall commence on site until written verification has been submitted to and approved in writing by the Local Planning Authority demonstrating that the dwellings hereby permitted have achieved a minimum of a 19% improvement in the dwelling emission rate over the target emission rate as defined in The Building Regulations for England Approved Document L1a: Conservation of Fuel and Power in New Dwellings (2013 edition), and built to the higher water efficiency standard under Regulation 36(3). Such evidence shall be in the form of a 'design stage' Standard Assessment Procedure (SAP), produced by an accredited energy assessor.

Table 1.

Address1	City	DER	TER	Percent Improvement (%)	PV Energy
104 Bekerley Avenue	Reading	4.91	16.54	70.30	3454.48

The development will use high performance insulation in the walls, floor and roof. The dwelling will have argon filled low u-value high performance windows and doors with an A rated gas boiler and the installation of the renewable energy with 4kwp of Photovoltaic.

Results – Baseline v's Improved Green U-value

ELEMENT	NOTIONAL U-VALUE (BASELINE)	ACTUAL U-VALUE (GREEN)
Floor	0.22	0.11
Wall	0.28	0.19
Roof – Rafter	0.18	0.11
Roof – Insulated Ceiling	0.16	0.10
Door	1.80	1.40
Window	1.60	1.40
Air Permeability (new builds)	10	5

Energy Hierarchy – Energy Strategy (DES10)

The building fabric performance determines the outcome for the carbon emissions from the energy

The building fabric performance determines the outcome for the carbon emissions from the energy usage of each dwelling in conjunction with (NPPF) National Planning Policy Framework. We propose to increase the energy and thermal performance to reduce the energy consumption and the CO2 emissions through enhancing the building fabric specifications over L1A 2013 Building Regulations.

The table below is demonstrating the above strategy:

Renewable Technology	Evaluation
Wind Turbine	There is not enough land for the turbines to be installed for the scheme.
	Due to the trees and surroundings the turbines would not be as efficient and lifetime of the components would reduce.
	There are property's close to the site which would be affected by the turbine noise, light and shadows created – and wouldn't be aesthetically pleasing.
	Roof mounted turbine are not a proven technology with its own technical issues which need to be resolved – it's not a viable option for this site.
Photovoltaics	Whilst PV does have a place on schemes it can affect the visual appearance of a development along with the RHI scheme being discontinued. However this is to be considered on the scheme however a survey would need to be undertaken but there is showing sufficient space for these to be installed, the survey would check to confirm suitable, regarding overshadowing from trees, and other structures and that the required KWP to be installed would be possible, this may determine that Solar PV is not suitable.
Solar Thermal	Whilst there would be sufficient space to install the solar water panels (a survey would be required), the amount installed would not be a significant improvement in the reduction in CO2 emissions.
ASHP (Air Source Heatpump)	This technology can be considered however, the following factors from a survey would need to be checked to see if suitable: a) Make sure the noise will not be an annoyance for the residents and local surrounding residents b) There is suitable space inside to house the water cylinder, of if a combi chosen would this be suitable c) Are the outside temperatures going to let the heat pump run efficiently
GSHP (Ground Source Heat Pump)	There is not enough land to house the provision of ground source for all the units
Biomass Boiler	There is not enough land to house the provision of biomass boiler – for the storage of the fuel, and associated

	equipment. It would be very difficult to manage on a multi housing scheme
CHP	Due to the size the management of the system wouldn't be viable as the infrastructure is not in place. CHP is usually installed in buildings with high electricity and heating demand for most of the year. Residential heating such as hotels, hospitals and flats for example bring a lot of small intermittent loads which gives a suitable heat demand for CHP.

Assessor and House Details

Assessor Name: John Young **Assessor Number:** STRO034821
Property Address: 104 Bekerley Avenue
 Reading

Buiding regulation assessment

	kg/m²/year
TER	16.54
DER	4.91

ENE 1 Assessment - Dwelling Emission Rate

Total Energy Type CO₂ Emissions for Codes Levels 1 - 5

	%	kg/m ² /year	
DER from SAP 2012 DER Worksheet		4.91	(ZC1)
TER		16.54	
Residual CO2 emissions offset from biofuel CHP		0	(ZC5)
CO2 emissions offset from additional allowable electricity generation		0	(ZC7)
Total CO2 emissions offset from SAP Section 16 allowances		0	
DER accounting for SAP Section 16 allowances		4.91	
% improvement DER/TER	70.3		