

Our Ref: PL-07

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12th July 2012

Dear Sirs

Re: Four new houses, 49 North Lane, Teddington - Thermal Calculations to satisfy requirement for 20 % of predicted energy to be offset by renewables.

Further to your instruction, herewith attached our SAP Thermal Calculations reference PL-07 (Notional and Actual house types) to support our findings that the Council's requirement of 20% of energy use can be achieved through the use of on site renewable energy sources.

The renewable energy target to be met through the installation of photovoltaic (PV) roof panels. The combined output from the panels is assessed to be 10.0kWp. We have taken into account both regulated and non-regulated energy use as per Richmond Upon Thames guidelines.

Attached is our Specification on which our findings are based.

Key Figures

Site Totals & Targets including Unregulated Energy	Total Site Demand (SAP)	15 076	kg/CO ₂ /YEAR
	Total Site Energy Demand (SAP)	48 568	kWhr/Year
	20% Target CO ₂	3015	kg/CO ₂ /YEAR
	21% Saving predicted using 10.0kWp of photovoltaic panel	3163	kg/CO ₂ /YEAR

I trust this is satisfactory. Should you have any queries, or would like to discuss anything, please do not hesitate to contact me.

Yours sincerely

A handwritten signature in black ink on a light green rectangular background. The signature appears to read "C. Marshall" with a long, sweeping underline.

Colin Marshall
SAP Assessor

Construction Specification for Part L1A Compliance

Project:	Date:	Our reference:	Version :
49 North Lane, Teddington	12 th July 2012	PL-07	2

1. Construction and insulation	
Element	U-Value (W/m ² K)
<p><u>a) Exposed Wall - Facing brick cavity wall</u> 102.5mm facing brick outer leaf + 85mm Dritherm 32 Cavity Fill + '100mm Celcon Standard. plasterboard finish.</p>	0.24
<p><u>b) Exposed Wall - insulated stud wall</u> 100mm mineral wool quilt between timber studs, plasterboard finish.</p>	0.44
<p><u>c) Exposed Wall - Dormer</u> Render or tiles, on 12mm chipboard, 100mm mineral wool quilt between timber studs, plasterboard finish.</p>	0.44
<p><u>d) Ground Floor</u> 75mm Screed on 120mm Celotex on beam and block floor.</p>	0.14
<p><u>e) Roof – insulation at ceiling joist level</u> 100mm mineral fibre quilt between joists, 300mm mineral fibre quilt cross laid over joists, 12.5mm plasterboard finish.</p>	0.11
<p><u>f) Roof – Sloping ceiling</u> 130mm Celotex GA3000 between rafters and 40mm Celotex under rafters, 12.5mm plasterboard finish.</p>	0.17
<p><u>g) Windows and rooflight</u> PVC-u or timber frame double-glazed + 16mm cavity (air or argon gas fill) + low-E soft coat glass to achieve a U-value of 1.60W/m²K, or Window Energy Rating Band C. Note; Obscure glazed blocks to side elevations assumed to have a u-value of 2.7W/m²K. Note; Front door assumed to have a u-value of 1.8W/m²K</p>	1.60
<p><u>h) Party Wall</u> Cavity party wall with cavity fully filled with insulation and full edge sealing to abutting elements.</p>	0.00
<p><u>i) Detailing</u> Accredited construction details adopted. Relevant checklists to be completed by Builder as construction work progresses. If forms are not completed and sent to Therm Energy Ltd, then Building Regulation compliance may not be achieved.</p>	

For information and checklists go to www.planningportal.gov.uk.

j) Air tightness

A design air permeability of 5.0m³/h/m² has been assumed and to be confirmed by air pressure testing to each dwelling.

(N.B. Therm Energy Ltd can quote for this service).

2. Heating and Ventilation

a) Main Heating System

Conventional (mains) gas-fired central heating with radiators. Condensing combi boiler - SEDBUK 2009 rating 89% or higher.

b) Secondary Heating System

It is assumed there is no secondary heating system.

c) Water Heating

From central heating boiler.

d) Heating Controls

Fully independent time and temperature zone control (note: separate plumbing circuits required, either with its own programmer, or separate channels in the same programmer). Boiler fitted with enhanced weather / load compensator.

e) Ventilation

System 1 - Background ventilators & intermittent extract fans, or passive stack ventilation (system 1 or 2 in Approved Document F1, 2010).

3. Other energy related issues

a) Lighting (internal)

100% Low-energy light fittings in accordance with Part L1.

b) Electricity Tariff

Standard Tariff.

c) Electricity Generation

Use of photovoltaic (PV) roof panels with a combined output of 10.0kWp (2.5kWp to each house). This equates to a total of about 18m² of panel to each house.

Please note the inclusion of PV panels is done to meet a planning condition requirement to achieve 20% of energy use through use of renewable energy sources..

Please note the dwelling can be shown to meet the standards of Building Regulations without the use of PV.

4. As- Built SAP Calculation and EPC

This section to be completed when the final SAP and EPC are required upon completion of the dwelling (s).

(1) Full postal address and postcode for the dwelling;

(2) Has there been any changes to the specification above (list changes, or state "no changes")

(3) Please provide copies of air leakage test certificate(s), and confirm results

(4) Please provide signed and dated copies of Accredited Construction Details Checklists

Signed ;

Date :

Name :

Job Title/ Role :