



## NHER - Results: As Built - Final

This NHER report is a quality assured output from NHER software.

Authorised SAP Assessor: Mr Martin Gill (OCDEA)

Assessor number: 1756

Date of Issue: 30/03/2009

Client:

Address: 16 Willingham Way, Kingston Upon Thames, Surrey, KT1 3JA

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<b>NHER</b>	<b>11.6</b>
CO <sub>2</sub> Emissions	2043 kg/yr
CO <sub>2</sub> Emissions Rate	26.68 kg/m <sup>2</sup> /yr
SQ <sub>x</sub> Emissions	-1.77 kg/yr
NQ <sub>x</sub> Emissions	2.25 kg/yr

### ANALYSIS OF FUEL USE AND COSTS

By Application:		GJ/yr	£/yr *
Cooking	Mains gas	4.5	33
Water heating	Mains gas	10.7	79
Main heating	Mains gas	30.0	220
Saving from generation	-	9.4	-236
Standing charges	-		93
Lights and appliances	Electric standard	6.1	177
<b>Total</b>		<b>41.8</b>	<b>367</b>

By Fuel Type:	GJ/yr	£/yr*
Mains gas	45.2	425
Electric standard	-3.3	-59

\* all costs include 5% VAT

\* calculated using the standard heating pattern

\* calculated using standard occupancy

\* calculated using actual consumption levels



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National Energy Services operates the NHER, which is a quality assured scheme compliant with the Department for Environment, Food and Rural Affairs (Defra) requirements for Authorised SAP Assessors. National Energy Services is a supplier of SAP software that has been approved by Defra, the Office of the Deputy Prime Minister, the Scottish Executive, the National Assembly for Wales and the Northern Ireland Department of Finance and Personnel.

### Reference Number

**NB-NES-00001756-09033023051200**



URN: ED1029 V: 3

Plan Assessor V: 4.2.28

SAP Worksheet (Version - 9.81)

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**Assessor Name** Mr Martin Gill (OCDEA)      **Assessor Number** 1756  
**Client**  
**Date Last Modified** 30/03/2009  
**Address** 16 Willingham Way, Kingston Upon Thames, Surrey, KT1 3JA

**MAIN CALCULATION DIAGNOSIS**
**Specific loss**

	<b>Zone 1</b>	<b>Zone 2</b>	<b>Total</b>
Specific loss (W/C):	32.19	165.06	197.24
Fabric loss (W/C):	21.04	113.30	134.34
Ventilation loss (W/C):	7.17	31.11	38.29
Thermal bridging loss (W/C):	3.97	20.64	24.62
Interzone coeff. (W/C):	71.96		

**Fabric Losses**

		<b>Total Area (m<sup>2</sup>)</b>	<b>Zone1 Area (m<sup>2</sup>)</b>	<b>U-value</b>	<b>Total AU</b>
Wall 1	Wall	73.10	11.19	0.80	58.48
1	Window	1.60	0.00	2.44	3.90
2	Window	1.60	0.00	2.44	3.90
3	Window	1.60	0.00	2.44	3.90
4	Window	3.03	0.00	2.44	7.39
5	Window	0.67	0.00	2.44	1.62
6	Window	3.03	0.00	2.44	7.39
7	Door	1.72	0.00	3.90	6.72
8	Window	1.27	0.00	4.03	5.10
Floor 1	GroundFloor	38.24	15.30	0.79	30.21
Roof 1	Roof	38.24	0.00	0.15	5.74

**Ventilation Losses**

	<b>A.C.H</b>
Infiltration due to chimneys, flues & fans:	0.21
Pressure test (L50):	0.36
Infiltration before exposure adjustment:	0.57
Exposure factor:	0.81
Infiltration after exposure adjustment:	0.46
Mechanical ventilation:	0.00
Occupant ventilation:	0.14



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**Date Last Modified** 30/03/2009

**Assessor Name** Mr Martin Gill (OCDEA)  
 Effective air change rate:  
 Ventilation loss:

**Assessor Number** 1756  
 0.61  
 38.29

**Incidental Gains**

	<b>Zone 1</b>	<b>Zone 2</b>	<b>Total</b>
Lights and appliances:	56.33	131.44	187.77
Metabolic:	73.72	73.72	147.45
Cooking:	0.00	106.04	106.04
Solar:	0.00	283.53	283.53
Hot water:	0.00	100.42	100.42
<b>Total</b>	<b>130.05</b>	<b>695.15</b>	<b>825.21</b>
Utilisation factor:	0.99		
Useful gains:	128.29	685.74	814.04

**Solar gains**

	Area m <sup>2</sup>	Flux	Frame Factor Table D.19	Transmission Factor Table D.20	Overshading Factor Table D.18	Gains (W)
West	7.67	48.88	0.80	0.76	0.70	159.48
East	3.86	48.88	0.80	0.76	0.70	80.36
East	1.27	48.88	0.70	0.85	0.70	25.80

**Total Gains:** 283.53

**Heating**

	<b>Primary</b>	<b>Secondary</b>	
Fuel used (GJ):	29.99	0.00	
Efficiency (%):	78.60	N/A	
	<b>Zone 1</b>	<b>Zone 2</b>	
Net useful heat (GJ/yr):	5.26	18.31	
Secondary fraction:	0.00	0.00	
Demand temperature:	21.00	18.46	
Mean internal temp. (C):	18.74	16.70	
Base temperature (C):	14.65	11.65	
Degree days:	1771.36	1105.39	<b>Total 2876.75</b>
Design heat loss (kW):		3.94	



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**Assessor Number** 1756

Approx boiler size (kW):

7.99

(Boiler size assumes heating to 22 °C @ 1.5 ACH + 15% oversizing + 3 kW for hot water)

Heat loss parameter:

2.58

Total floor area

76.58

**Water Heating**

	<b>Watts</b>	<b>GJ/yr</b>
Hot water demand:	205.79	
Distribution loss:	36.22	
Primary pipework loss:	25.00	
Manufacturer's loss factor :	N/A	
On-Peak Fraction :	1.00	
Volume factor:	0.0000	
Intermediate cyl loss (CL):	N/A	
Temperature factor:	0.0000	
Cylinder heat loss:	0.00	
Solar input:	0.00	
H/W appliance eff. (%):	78.60	

**Fuel use main:**
**10.71**
**Fuel use secondary:**

Overall system eff. (%):	N/A
Internal gains from water heating (W):	100.42
Number of people:	2.46
Cylinder/store size (litres):	N/A

**Light and Appliances**
**GJ/Yr**

Appliance use:	6.71
Low energy lights savings:	-1.27
Pumps, flues and warm air fans:	0.62
Combi keep hot electricity:	N/A
Mechanical ventilation system consumption:	N/A
Extract fans consumption:	N/A
<b>Total electricity used:</b>	<b>6.06</b>

**Solar Photo-Voltaic (PV)**


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**Date Last Modified** 30/03/2009**Assessor Name** Mr Martin Gill (OCDEA)  
Peak panel output (KW):**Assessor Number** 1756  
3.87

Solar flux (W):

101.14

Overshading factor of PV array:

1.00

**Electricity Produced (GJ/year)****9.39**

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**Assessor Name** Mr Martin Gill (OCDEA)

**Date Last Modified** 30/03/2009

**Assessor Number** 1756

**Results**

<b>NHER</b>	11.57	
CO <sub>2</sub> Emissions	2043	kg/yr
CO <sub>2</sub> Emissions Rate	26.68	kg/m <sup>2</sup> /yr
SO <sub>x</sub> Emissions	-1.77	kg/yr
NO <sub>x</sub> Emissions	2.25	kg/yr

**ANALYSIS OF FUEL USE AND COSTS**
**By Application:**

		<b>GJ/yr</b>	<b>£/yr *</b>
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**By Fuel Type:**

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**Address** 16 Willingham Way, Kingston Upon Thames, Surrey, KT1 3JA

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**SITE FACTORS**

Degree day region: Thames  
 Wind speed: 4.00 m/s  
 Site exposure: Below Average  
 Height above sea level: 20.00 m  
 Sheltered sides(Building exposure): 1

**BUILDING**

Property type: House  
 Built form: End Terrace

**WALLS**

Name	U-value (W/m <sup>2</sup> k)	Area (m <sup>2</sup> )	Zone 1 (m <sup>2</sup> )	Semi Exposed
Wall 1	0.80	87.62	11.19	Unknown

**ROOFS**

Name	U-value (W/m <sup>2</sup> k)	Area (m <sup>2</sup> )	Zone 1 (m <sup>2</sup> )	Semi Exposed
Roof 1	0.15	38.24	0.00	Unknown

**FLOORS**

Name	U-value (W/m <sup>2</sup> k)	Area (m <sup>2</sup> )	Zone 1 (m <sup>2</sup> )	Perimeter (m)
Floor 1	0.79	38.24	15.30	Unknown



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**OPENINGS**

Description	Ref	Orientation	Frame	Glazing	U-value	Area	Zone 1	Draught proofing
kitchen	W 1	East	uPVC	Double	2.70	1.60	No	Loose sealed
master bed	W 2	East	uPVC	Double	2.70	1.60	No	Loose sealed
bed rear	W 3	West	uPVC	Double	2.70	1.60	No	Loose sealed
living room	W 4	West	uPVC	Double	2.70	3.03	No	Loose sealed
bath and T	W 5	East	uPVC	Double	2.70	0.67	No	Loose sealed
living room	W 6	West	uPVC	Double	2.70	3.03	No	Loose sealed
front door	D 7	East	Wood	Single	3.90	1.72	No	Loose sealed
hall	W 8	East	Wood	Single	4.80	1.27	No	Unopenable

**HOUSE VOLUME**

Storey	Internal Floor area	Storey height
Lowest occupied	38.24	2.34
+1	38.34	2.65

**VENTILATION**

Main stairs in Zone 1?	No
Number flues:	0
Loft hatch:	N/A
Mechanical ventilation:	Not present (natural)
Standard fans:	0
Low-energy fans:	0
Pressure test?	Yes
Air permeability	7.28
Draught lobby:	N/A
Open chimneys:	0
Standard passive vents:	2
Humidity controlled vents:	0



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**Thermal bridging:**

Detailed thermal bridges calculation: No  
'y' value type: 0.15 default 'y' value used  
User defined 'y' value: N/A

**HEATING SYSTEM**

Primary type: Boiler,  
Primary Fuel: Mains gas  
Primary system: 1998 or later - Combi, auto ignition  
Primary system flue: Yes  
Primary efficiency: 78.60 % Source: Boiler Efficiency database  
Heat emitter: Radiators  
Primary controls: Programmer, room thermostat and TRV's  
Boiler interlock: Yes  
Pump in heated space? Yes  
No. radiators in zone 2: 4  
No TRVs in zone 2: 4  
Secondary system: N/A  
Economy 7 available? No

**WATER HEATING**

Water heating by: From main  
Water heating fuel: Mains gas  
Water heating separately timed: N/A  
Manufacturer's loss factor : N/A  
Declared factor : N/A  
Cylinder insulation: N/A  
Primary pipework: N/A  
Cylinder thermostat: N/A  
Cylinder Volume: N/A  
Boiler interlock: Yes  
Solar water heating: No



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**PHOTOVOLTAICS (PV):**

Photovoltaics: Yes  
Installed peak power (kWp): 3.87  
Collector orientation: East/West  
Collector tilt: 30 degrees  
Overshading: None or very little < 20%

**SPECIAL FEATURES:**

Special features included: No

**APPLIANCES**

Cooking type: Gas cooker  
Cooking fuel: Mains gas  
Kitchen in zone 1? No  
Low energy lights? Yes

**LEVEL OF USE**

Cooker use: Average  
Electricity use: Well below average  
Hot water use: Average

**NUMBER OF OCCUPANTS**

Occupancy: Standard occupancy  
Number of adults: N/A  
Number of children: N/A

**HEATING PATTERN**

Heating pattern: Standard  
Demand temperature: 21  
Percentage of zone 2 heated: 100 %  
Weekday heating periods: 2  
First heating period duration: 2 hours  
Time between heating periods: 7 hours  
Second heating period duration: 7 hours



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Weekend heating periods: 1

First heating period duration: 16 hours

Time between heating periods: N/A

Second heating period duration: N/A



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