



# energy

## ASSESSMENTS

### SAP Calculations

Client: Actual Assessment  
Mr D Geary C/o David Bonner Architecture

Project: Former Post Office, High Street  
Southrepps, Norfolk

Contact: Stuart Tate  
SCT Energy Assessments  
[sctenergyassess@btinternet.com](mailto:sctenergyassess@btinternet.com)



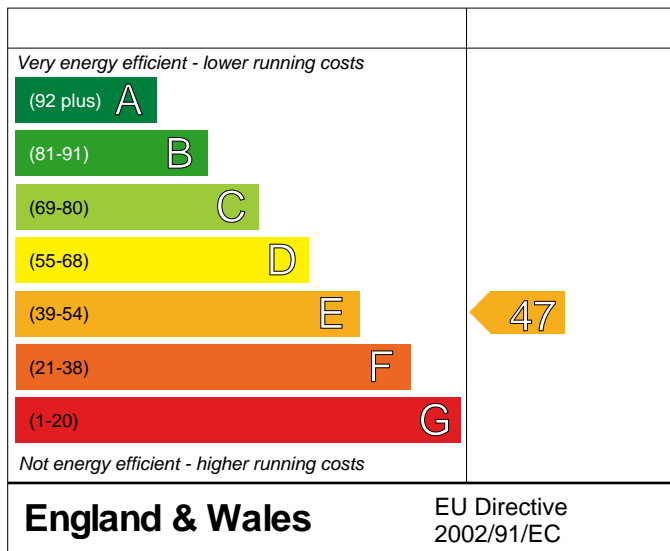
Former Post Office, High Street,  
Southrepps,  
Norfolk

Dwelling type: Flat, Mid-Terrace  
Date of assessment: 18.Mar.2014  
Produced by: SCT Energy Assessments  
Total floor area: 52.82 m<sup>2</sup>

This document is a Predicted Energy Assessment for properties marketed when they are incomplete. It includes a predicted energy rating which might not represent the final energy rating of the property on completion. Once the property is completed, this rating will be updated and an official Energy Performance Certificate will be created for the property. This will include more detailed information about the energy performance of the completed property.

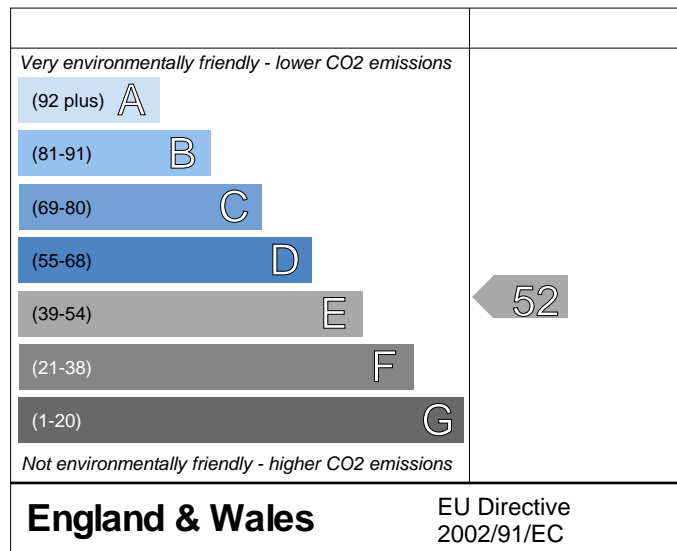
The energy performance has been assessed using the Government approved SAP2009 methodology and is rated in terms of the energy use per square meter of floor area; the energy efficiency is based on fuel costs and the environmental impact is based on carbon dioxide (CO<sub>2</sub>) emissions.

## Energy Efficiency Rating



The energy efficiency rating is a measure of the overall efficiency of a home. The higher the rating the more energy efficient the home is and the lower the fuel bills are likely to be.

## Environmental Impact (CO<sub>2</sub>) Rating



The environmental impact rating is a measure of a home's impact on the environment in terms of carbon dioxide (CO<sub>2</sub>) emissions. The higher the rating the less impact it has on the environment.

## SURVEY NOTES

**Property Reference:** 7840-0001-1195

**Issued on Date:** 18.Mar.2014

**Survey Reference:** Actual Assessment

**Prop Type Ref:**

**Property:** Former Post Office, High Street, Southrepps, Norfolk

**SAP Rating:** 47 E **CO2 Emissions (t/year):** 3.55 **DER:** 0.00 Pass **Reduction:** 0.0% **FEE:** 99.3 **ZC8:** 0.00  
**Environmental:** 52 E **General Requirements Compliance:** Fail **TER:** 0.00 **HLP:** 2.11 **Energy cost:** £ 963

**CfSH Results** **Version:** **ENE1 Credits:** N/A **ENE2 Credits:** N/A **ENE7 Credits:** N/A **CfSH Level:** N/A

**Surveyor:** Stuart Tate, Tel: 01493 740804

**Surveyor ID:** 7840-0001

**Address:** King Georges Avenue, Rollesby, Great Yarmouth, Norfolk, NR29 5EN

**Client:**

**Software Version:** Elmhurst Energy Systems SAP2009 Calculator (Design System) version 4.02r03

**SAP version:** SAP 2009, **Regs Region:** England and Wales (Part L1A 2010), **Calculation Type:** Conversion - new dwelling

**SURVEY NOTES - Last time updated on: 18.03.2014**

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This Assessment has been carried out to provide the Energy Performance Certificate for the Completed Dwelling when finished.

It is also provided to give justification for the works in the Upgrade which do not meet the minimum values in Approved Document L1B.

A notional assessment has been carried out assuming that the dwelling is converted in accordance with AD L1B. This gives a CO2 emission rate of 3.56 t/year.

The actual assessment as built will emit 3.55 t/year, therefore showing compliance with AD L1B.

The measures used are thus

Actual - Existing walls upgraded to achieve only 0.36 - should be 0.30

Actual - roofs only upgraded to achieve 0.30 and 0.38 - should be 0.18

Actual - floor is already below threshold u-value, therefore no upgrading required, however floor is battened and timber finish provided to improve U-Value

Internal lighting will be provided at 100%

The Property is ventilated by a ventilation system with heat recovery rather than extract fans.

The existing front door is single glazed and will be retained.

## Summary Information

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### SUMMARY FOR INPUT DATA FOR Conversion - new dwelling

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Orientation	North
1.0 Property Type	Flat, Mid-Terrace
2.0 Number of Storeys	1
3.0 Date Built	2014
3.0 Property Age Band	
4.0 Sheltered Sides	2
5.0 Sunlight/Shade	Average or unknown

#### 6.0 Measurements

	Internal Perimeter	Internal Floor Area	Average Storey Height
Ground Floor:	11.45	52.82	2.2

7.0 Living Area 26.84

8.0 Thermal Mass Parameter Simple calculation - Medium

#### 9.0 External Walls

Description	Construction	U-Value	Element	Kappa	Gross Area	Nett Area
External Wall 1	Other	0.36		0.00	25.37	12.05

#### 9.1 Party walls

Description	Construction	Element	Kappa	Area
Party Wall 1	Other		0.00	44.02

#### 10.0 External Roofs

Description	Construction	U-Value	Element	Kappa	Gross Area	Nett Area
External Roof 1	Other	0.30		0	1.80	1.80
Sloped roof	Other	0.38		9	10.80	10.80

#### 10.1 Party Ceilings

Description	Construction	Element	Kappa	Area
Party Ceiling 1	Other		0	43.70

#### 11.0 HeatLoss Floors

Description	Construction	U-Value	Element	Kappa	Area
Heat Loss Floor 1	Other	0.41		0	52.82

#### 12.0 Opening Types

Description	Data Source	Type	Glazing	Glazing Gap	Argon Filled	Solar Trans	Frame Type	Frame Factor	U value
Front door	SAP table	Half Glazed Door	Single glazed				Wood		3.90
Double glazed exis	SAP table	Window	Double glazed	12 mm	No	0.76	Wood	0.70	2.80
New door	Manufacturer	Half Glazed Door	Double Low-E Soft 0.05			0.63		0.70	1.80
Windows new	Manufacturer	Window	Double Low-E Soft 0.05			0.63		0.70	1.60

#### 13.0 Openings

Name	Opening Type	Location	Orientation	Curtain Type	Overhang Ratio	Wide Overhang	Width	Height	Count	Area	Curtain Closed
Existing front door	Half Glazed Door - Front door	External Wall 1	North	None	0	No	0	0	0	1.89	0
Existing north	Window - Double glazed exis	External Wall 1	North	None	0	No	0	0	0	6.48	0
Existing West	Window - Double glazed exis	External Wall 1	West	None	0	No	0	0	0	0.72	0
New rear door	Half Glazed Door - New door	External Wall 1	South	None	0	No	0	0	0	1.89	0
New windows	Window - Windows new	External Wall 1	South	None	0	No	0	0	0	2.34	0
14.0 Conservatory		None									
15.0 Draught Proofing		100									
16.0 Draught Lobby		No									
17.0 Thermal Bridging		Default									
Y-value		0.15									
Description											
18.0 Pressure Testing		No									
Designed q50		15.00									
Property Tested ?											
As Built q50											
Same As Designed ?											
19.0 Mechanical Ventilation											
Mechanical Ventilation System		Yes									
Present											
Approved Installation		Yes									
Windows open in hot weather		Windows fully open									
Cross ventilation possible		Yes									
Night Ventilation		Yes									
Air change rate		6.00									
Mechanical Ventilation data Type		Data Sheet									
Type		Balanced mechanical ventilation with heat recovery									
MV Reference Number											
Configuration											
MVHR Duct Insulated		No									
Manufacturer SFP		1									
Duct Type		Flexible									
MVHR Efficiency		90									
Wet Rooms		2									
Brand, Model		Unknown									
20.0 Fans, Open Fireplaces, Flues											
		MHS	SHS	Other	Total						
Number of Chimneys		0		0	0						
Number of open flues		0		0	0						
Number of intermittent fans					0						
Number of passive vents					0						
Number of flueless gas fires					0						
21.0 Cooling System		No									
22.0 Lighting											
Internal											
Total number of light fittings		8									
Total number of L.E.L. fittings		8									
Percentage of L.E.L. fittings		100.00									
External											
External lights fitted		No									
Light and motion sensors											
23.0 Electricity Tariff		Standard									
24.0 Heating Systems											
Main Heating 1		SAPTable									
Description											
Percentage of Heat		100.00									
Main Heating 2		None									
Description											
Percentage of Heat											
Community Heating											
Secondary Heating											
Water Heating		Main Heating 1									
Flue Gas Heat Recovery System		No									
Waste Water Heat Recovery System		No									

Waste Water Heat Recovery System	No
2 Solar Panel	No
<hr/>	
25.0 Main Heating 1	
Database Ref. No.	
Fuel Type	
Main Heating	Electricity BEC Water storage boiler in heated space
TestMethod	
SAP Code	195
Efficiency ( SAP Table ) %	100
In Winter	
In Summer	
Model Name	
Manufacturer	
Controls	CBD Programmer, room thermostat and TRVs
Delayed Start Stat	No
Sap Code	2106
Burner Control	
Boiler Compensator	None
HETAS approved System	
Oil Pump Inside	
FI Case	
FI Water	
Flue Type	
Smoke Control Area	
Fan Assisted Flue	
Is MHS Pumped	Pump in heated space
Heat Emitter	Radiators
Underfloor Heating	
Electric CPSU Temperature	
Combi boiler type	
Combi keep hot type	
Combi store type	
<hr/>	
27.0 Community Heating	
Space Community Heating	
Distribution Loss	
Distribution Loss Value	
Controls	
SAP Code	
Water Community Heating	
Distribution Loss	
Distribution Loss Value	
Charging Linked To Heat Use	
<hr/>	
28.0 Secondary Heating	
Description	
SHS efficiency %	
SAP Code	
HETAS Approved System	
Smoke Control Area	
Test Method	
Manufacturer	
Model Name	
<hr/>	
29.0 Water Heating	HWP From main heating 1
Water use <= 125 litres/person/day	Yes
SAP Code	901
Immersion Heater	
Summer Immersion	
Supplementary Immersion	
Immersion Only Heating Hot Water	
29.1 Flue Gas Heat Recovery System	
Database ID	
Brand Model	
Details	
29.2 Waste Water Heat Recovery System	
Total rooms with shower and/or bath	
30.0 Hot Water Cylinder	
Cylinder Stat	Hot Water Cylinder
Cylinder In Heated Space	Yes
Independent Time Control	Yes
Insulation Type	Foam
Insulation Thickness	80
Cylinder Volume	60
Loss (kwh/day)	
Pipes insulation	Yes
In Airing Cupboard	



## U-value calculator report

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**Environmental:** 52 E   **General Requirements Compliance:** Fail   **TER:** 0.00   **HLP:** 2.11   **Energy cost:** £ 963

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**Client:**

Software Version: Elmhurst Energy Systems Design SAP 2009 version 4.02r03

### Building Elements:

#### Roof 000002

Roof Type: Flat Roof standard (no precipitation)

Layer	Description	Thickness	Lambda	R	Fraction
<b>Ext surface</b>				0.040	
<b>Layer 1</b>	<b>Felt/bitumen layers</b>				
	Main construction	5 mm	0.230	0.022	100.00 %
<b>Layer 2</b>	<b>Orientated Strand Board</b>				
	Main construction	18 mm	0.130	0.138	100.00 %
<b>Layer 3</b>	<b>Celotex GA4000</b>				
	Main construction	100 mm	0.022	4.545	87.50 %
	Bridging - Timber	100 mm	0.130		12.50 %
	Corrections - Air Gap: Level 1, Fasteners: None or plastic				
<b>Layer 4</b>	<b>Polythene, 500 gauge</b>				
	Main construction	1 mm	0.000	0.000	100.00 %
<b>Layer 5</b>	<b>Plasterboard, standard</b>				
	Main construction	13 mm	0.210	0.060	100.00 %
<b>Layer 6</b>	<b>Plaster, standard</b>				
	Main construction	3 mm	0.400	0.008	100.00 %
<b>Int surface</b>				0.100	

**Total resistance:**    Upper limit = 3.471 m<sup>2</sup> K/W    Lower limit = 3.184 m<sup>2</sup> K/W    Average = 3.328 m<sup>2</sup> K/W  
U-value (unrounded) = 0.3 W/m<sup>2</sup> K

Unheated space: None

**Total thickness: 140 mm      U-value: 0.30 W/m<sup>2</sup> K**



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### Building Elements:

#### Roof 000003

Roof Type: Pitched Roof, insulated sloping ceiling

Layer	Description	Thickness	Lambda	R	Fraction
<b>Ext surface</b>				0.100	
<b>Layer 1</b>	<b>Tiling, concrete</b>				
	Main construction	25 mm	1.500	0.000	100.00 %
<b>Layer 2</b>	<b>airspace/timber battens</b>				
	Main construction	25 mm	0.250	0.000	89.63 %
	Bridging - Timber	25 mm	0.156		10.37 %
	Corrections - Cavity Ventilated, Emissivity: Normal				
<b>Layer 3</b>	<b>Breather membrane</b>				
	Main construction	1 mm	0.000	0.000	100.00 %
<b>Layer 4</b>	<b>Standard cavity</b>				
	Main construction	50 mm	0.625	0.080	87.50 %
	Bridging - Timber	50 mm	0.130		12.50 %
	Corrections - Cavity Slightly ventilated, Emissivity: Normal				
<b>Layer 5</b>	<b>Celotex GA4000</b>				
	Main construction	50 mm	0.022	2.273	100.00 %
	Corrections - Air Gap: Level 1, Fasteners: None or plastic				
<b>Layer 6</b>	<b>Plasterboard, standard</b>				
	Main construction	13 mm	0.210	0.060	100.00 %
<b>Layer 7</b>	<b>Plaster, standard</b>				
	Main construction	3 mm	0.400	0.008	100.00 %
<b>Int surface</b>				0.100	
<b>Total resistance:</b>		Upper limit = 2.654 m <sup>2</sup> K/W	Lower limit = 2.629 m <sup>2</sup> K/W	Average = 2.641 m <sup>2</sup> K/W	
U-value (unrounded) = 0.38 W/m <sup>2</sup> K					

Unheated space: None

**Total thickness: 167 mm**

**U-value: 0.38 W/m<sup>2</sup> K**

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**Environmental:** 52 E   **General Requirements Compliance:** Fail   **TER:** 0.00   **HLP:** 2.11   **Energy cost:** £ 963

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### Building Elements:

#### Wall 000001

Layer	Description	Thickness	Lambda	R	Fraction
<b>Ext surface</b>				0.040	
<b>Layer 1</b>	<b>Brick, outer leaf</b>				
	Main construction	215 mm	0.770	0.279	82.81 %
	Bridging - Mortar	215 mm	0.941		17.19 %
<b>Layer 2</b>	<b>Render - Cement and Sand</b>				
	Main construction	12 mm	1.000	0.012	100.00 %
<b>Layer 3</b>	<b>Celotex GA4000</b>				
	Main construction	50 mm	0.022	2.273	100.00 %
	Corrections - Air Gap: Level 1, Fasteners: None or plastic				
<b>Layer 4</b>	<b>Plasterboard, standard</b>				
	Main construction	13 mm	0.210	0.060	100.00 %
<b>Layer 5</b>	<b>Plaster, standard</b>				
	Main construction	3 mm	0.400	0.008	100.00 %
<b>Int surface</b>				0.130	
<b>Total resistance:</b>		Upper limit = 2.792 m <sup>2</sup> K/W	Lower limit = 2.791 m <sup>2</sup> K/W	Average = 2.791 m <sup>2</sup> K/W	
U-value (unrounded) = 0.36 W/m <sup>2</sup> K					
Unheated space: None					
<b>Total thickness: 293 mm</b>		<b>U-value: 0.36 W/m<sup>2</sup> K</b>			

#### Floor 000004

Floor Type: Slab On Ground Floor Area = 52.82 m <sup>2</sup> , Perimeter = 11.45 m, Wall thickness = 215.00 mm, Soil: Unknown Horizontal edge insulation: none Vertical edge insulation: none					
Layer	Description	Thickness	Lambda	R	Fraction
<b>Ext surface</b>				0.040	
<b>Layer 1</b>	<b>Concrete, medium density</b>				
	Main construction	100 mm	1.350	0.074	100.00 %
<b>Layer 2</b>	<b>airspace/timber battens</b>				
	Main construction	18 mm	0.100	0.180	89.63 %
	Bridging - Timber	18 mm	0.095		10.37 %
	Corrections - Cavity Unventilated, Emissivity: Normal				
<b>Layer 3</b>	<b>Hardwood, dry</b>				
	Main construction	18 mm	0.180	0.100	100.00 %
<b>Int surface</b>				0.170	
<b>Total resistance:</b>		Upper limit = 0.355 m <sup>2</sup> K/W	Lower limit = 0.355 m <sup>2</sup> K/W	Average = 0.355 m <sup>2</sup> K/W	
U-value (unrounded) = 0.41 W/m <sup>2</sup> K					
Unheated space: None					

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<b>Environmental:</b> 52 E	<b>General Requirements Compliance:</b> Fail	<b>TER:</b> 0.00		<b>HLP:</b> 2.11	<b>Energy cost:</b> £ 963

<b>CfSH Results</b>	<b>Version:</b>	<b>ENE1 Credits:</b> N/A	<b>ENE2 Credits:</b> N/A	<b>ENE7 Credits:</b> N/A	<b>CfSH Level:</b> N/A
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### Building Elements:

**Total thickness:** 136 mm

**U-value:** 0.41 W/m<sup>2</sup> K