Energy strategy report

Proposed Development Of 26 New Affordable Houses Comprising 11 x 2 Bedroom Units Plus 15 x 3 Bedroom Units

FIRS WOOD CLOSE, NORTHAW, POTTERS BAR, EN7 4BY



April 2019

Client: Watford Community Housing Trust

Planning Consultants: DLA Planning

Prepared by



accredited SAP assessors

2 Flete House, Flete, IVYBRIDGE, PL21 9NX. T 01752 830291

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1.0 INTRODUCTION

1.1 Brief

Monitor Energy Consultancy have been instructed by DLA Town Planning Ltd, on behalf of their Client, Watford Community Housing Trust to undertake an Energy Report, to appraise how the proposed development for the construction of the 26 new affordable houses will respond to the Welwyn Hatfield Borough Council's Energy Efficiency Policy R3 which requires the development to include measures to maximise energy conservation through the design of buildings, site layout and provision of landscaping.

The purpose of the report is to demonstrate how the development will maximise energy conservation and reduce carbon emissions beyond the requirements of current Building Regulations through passive and active energy conservation methods while providing a viable and deliverable solution appropriate for affordable housing.

1.2 Proposed Development

The proposed development comprises the construction of 26 new affordable houses comprising 11×2 bed and 15×3 bed houses, each with private parking and rear gardens. The proposals have been designed to make optimum use of the land available

1.3 Site Description

The site lies between Firs Wood Close to the West, Coopers Lane Road to the South and The Oshwal Centre to the East, with access proposed from Firs Wood Close.

2.0 EXECUTIVE SUMMARY

The following statement seeks to demonstrate that the energy efficiency of the development will achieve more than 12% improvement in total carbon emissions compared to current Building Regulations 2013 requirements.

In this instance the use of passive and active energy efficient measures have been adopted as the main approach to achieve this target. Specific commitments and key measures to achieve the target CO₂ reductions include:

- A consistent fabric first approach to ensure the thermal elements are insulated to a
 high standard in the first instance using enhanced standards of insulation for the
 floors, walls and roofs and high performance double-glazed windows and doors.
- Low air leakage rates.
- High standard detailing to minimise heat loss due to thermal bridging at junctions.
- Highly efficient gas combi boilers with advanced zone controls.
- 100% low energy lighting.
- Incorporation of proven and well recognised technologies with limited requirements for future maintenance.
- No visible intrusion from solar or photovoltaic panels on the development while retaining the opportunity for these to be provided in the future.

This appraisal demonstrates that by adopting the above approach a reduction in carbon emissions in excess of 12% compared to Building Regulation L1A 2013 resulting in a total saving of 5.27 tonnes of CO₂/year will be achieved for the regulated emissions from this development.

3.0 ESTABLISHING CO₂ EMISSIONS

3.1 Standard Case Energy Demand Assessment

The dwellings have been modelled using SAP 2012 to establish the Standard Case dwelling carbon emission rates to meet Building Regulations Part L1A 2013 compliance.

The calculated TERs (Target Emission Rates) are as tabulated below with sample individual TERS included in Appendix A.

Plot no	Total Area	Туре	Standard Case TER	Total Regulated CO2		
	GIA (m2)		CO ₂ kg/m2/yr	emissions kg/yr		
Plot 1	83.2	2 bed semi	18.30	1522.56		
Plot 2	83.2	2 bed semi	18.30	1522.56		
Plot 3	83.2	2 bed semi	18.30	1522.56		
Plot 4	83.2	2 bed semi	18.30	1522.56		
Plot 5	96.3	3 bed detached	17.07	1483.02		
Plot 6	83.2	2 bed semi	18.30	1522.56		
Plot 7	83.2	2 bed semi	18.30	1522.56		
Plot 8	83.2	2 bed semi	18.25	1518.40		
Plot 9	96.3	3 bed semi	17.12	1648.66		
Plot 10	96.3	3 bed semi	17.12	1648.66		
Plot 11	83.2	2 bed semi	18.25	1518.40		
Plot 12	96.3	3 bed semi	16.90	1627.47		
Plot 13	96.3	3 bed semi	16.90	1627.47		
Plot 14	96.3	3 bed semi	16.77	1614.95		
Plot 15	96.3	3 bed semi	16.77	1614.95		
Plot 16	96.3	3 bed semi	16.77	1614.95		
Plot 17	96.3	3 bed semi	16.77	1614.95		
Plot 18	96.3	3 bed semi	16.77	1614.95		
Plot 19	96.3	3 bed semi	16.77	1614.95		
Plot 20	96.3	3 bed semi	16.77	1614.95		
Plot 21	96.3	3 bed semi	16.77	1614.95		
Plot 22	96.3	3 bed semi	17.24	1660.21		
Plot 23	96.3	3 bed semi	17.24	1660.21		
Plot 24	83.2	2 bed end	17.8	1231.36		
Plot 25	96.3	2 bed mid	16.6	1381.12		
Plot 26	83.2	2 bed end	17.8	1231.36		
TOTAL	2359.7		(average) 17.35	40,951.32		

Table 3.1 Standard Case Regulated loads - TER results for all dwellings

Table 3.1 demonstrates that the total regulated CO₂ emissions due to heating, hot water, pumps and fans and lighting for the development if built to Building Regulations Part L1A standard would be 40,951.32 kg/yr.

3.2 Actual Case Energy Demand Assessment

For the actual proposed case, the following improvements have been incorporated across the development, in order to reduce energy demand:

Element	Building Regulations standard	Proposed
Ground floor U value	0.22 W/m2K	0.12 W/m2K
External walls U value	0.28 W/m2K	Fair faced brick walls 0.11 W/m2K Other walls 0.13 W/m2K
Party walls	0.2 W/m2K	0.0W/m2K
Roofs	0.16 W/m2K	0.11 W/m2K
Windows and doors	1.6 W/m2K	1.4 W/m2K
Air permeability rate	10.0m3/hm2 (@50Pa)	5.0m3/hm2 (@50Pa)
Thermal bridging y value	0.15	0.04 approx
Gas boiler efficiency	88%	89.7%
Boiler controls	Programmer, thermostat and TRVs	Time and temperature zone controls for separate rooms
Energy efficient lighting	75% of lights	100% of lights

Fabric Efficiency improvements

- Improved U values of 0.12W/m2K for the ground floor using 150mm Celotex XR4000 or similar.
- Improved U values of 0.11W/m2K for the external and sheltered walls.
- Improved U values of 0.13W/m2K for brick walls and 0.11W/m2K for rendered/ boarded walls using 150mm Xtratherm insulation and lightweight aircrete blocks internally with plasterboard dry lining.
- Improved U value of 0.0 W/m2K for the party walls by ensuring these are fully insulated so there is no heat loss.
- Improved U-value of 0.11 W/m2K for all roofs using 400mm mineral wool.

- Hi-therm lintels to minimise heat loss at this junction
- All windows to be high-performance double-glazed low e, with 16mm minimum gap, argon filled to achieve a U value of 1.4W/m2K.
- All junctions in construction to be well sealed to achieve a high level of air tightness with the properties air tested to achieve an air permeability rate of 5 or lower.
- Xtratherm thermal bridging details to be adopted for all junctions where available to ensure insulation is fully overlapped to reduce thermal bridging.

Additional Energy efficiency measures

- Ecotec or similar gas combi boiler 89.7% efficient with zone controls, underfloor heating to ground floor, radiators to first floor,
- 100% low energy lighting.

The dwellings have been modelled incorporating the improvements detailed above and the actual proposed DERs (Dwelling Emission Rates) are tabulated below in Table 3.2 with sample individual DERs included in Appendix A

Plot no	Total Area	Туре	Actual Case DER	Total Regulated CO2			
	GIA (m2)		CO ₂ kg/m2/yr	emissions kg/yr			
Plot 1	83.2	2 bed semi	15.39	1280.45			
Plot 2	83.2	2 bed semi	15.39	1280.45			
Plot 3	83.2	2 bed semi	15.39	1280.45			
Plot 4	83.2	2 bed semi	15.39	1280.45			
Plot 5	96.3	3 bed detached	15.4	1483.02			
Plot 6	83.2	2 bed semi	15.39	1280.45			
Plot 7	83.2	2 bed semi	15.39	1280.45			
Plot 8	83.2	2 bed semi	15.34	1276.23			
Plot 9	96.3	3 bed semi	15.32	1475.32			
Plot 10	96.3	3 bed semi	15.32	1475.32			
Plot 11	83.2	2 bed semi	15.34	1276.23			
Plot 12	96.3	3 bed semi	15.07	1451.24			
Plot 13	96.3	3 bed semi	15.07	1451.24			
Plot 14	96.3	3 bed semi	14.96	1440.65			
Plot 15	96.3	3 bed semi	14.91	1435.83			
Plot 16	96.3	3 bed semi	14.91	1435.83			
Plot 17	96.3	3 bed semi	14.96	1440.65			
Plot 18	96.3	3 bed semi	14.96	1440.65			
Plot 19	96.3	3 bed semi	14.91	1435.83			
Plot 20	96.3	3 bed semi	14.91	1435.83			
Plot 21	96.3	3 bed semi	14.96	1440.65			
Plot 22	96.3	3 bed semi	15.45	1487.84			
Plot 23	96.3	3 bed semi	15.45	1487.84			
Plot 24	83.2	2 bed end	14.8	1231.36			
Plot 25	96.3	2 bed mid	13.94	1159.81			
Plot 26	83.2	2 bed end	14.8	1231.36			
TOTAL	2359.7		(average) 15.12	35675.52			

Table 3.2 Actual Proposed Case Regulated loads - DER results for all dwellings

Table 3.2 demonstrates that the total regulated CO₂ emissions for the development if built including the improvements listed above would be reduced to **35**, **675.52** kg/yr.

This represents a reduction of $40951.32 - 35675.52 = 5275.80 \, kgCO_2/yr$ which is a 12.88% reduction of CO₂ emissions compared with current 2013 Building Regulations.

4.0 RENEWABLE ENERGY TECHNOLOGIES ASSESSMENT

Seven potential renewable energy technologies were considered for integration within the proposed development. Feasibility is based on location, cost, payback for both initial payment and ongoing maintenance and suitability.

4.1 Photovoltaic cells

There is an opportunity to install photovoltaic cells on the roofs however this option has been discarded for cost reasons and because of the visual intrusion these create. However, it would be possible to install these in the future.

4.2 Solar Water Heating

The development also has the potential to use solar water heating with panels located on roof areas however these would therefore be competing for the same space as the PV panels and would not be able to achieve as much carbon reduction as PV.

4.3 Ground Source Heat pump

Approximately 10m of trench for slinky pipes would be required to obtain 1kW output of heating. For a small to average heat pump of 6kW this would require 60m for each unit, a total of 1560m, therefore there would not be adequate space on the site for this option. The alternative method involving drilling a borehole would be extremely expensive and not generally considered a feasible option for small scale domestic applications.

4.4 Air Source Heat Pump

Air source heat pumps are not as efficient as ground source heat pumps and would require individual units which would be both visually and audibly obtrusive. The units would be both more expensive to run and would potentially require more maintenance. This option has therefore been discarded.

4.6 Wind

Wind turbines are only appropriate where the average wind velocity is in excess of 6m/s. The DECC wind speed database estimates the average wind speed in this location is less

than 4.17m/s at an average height of 20m above ground level which would not create a viable supply of energy. In addition, a wind turbine would be both visually and audibly intrusive and not suitable for this small site where there is insufficient space to accommodate it. This option has therefore been discarded.

4.7 Biomass

Biomass boilers would require increased management, maintenance and space for both a central energy plant room and biomass store. In addition, there would be a requirement for biomass deliveries via heavy vehicles, therefore it is considered that this site and its location are not suitable for fuel delivery, storage or local supply. This option has therefore been discarded.

5.0 CONCLUSIONS

This report identifies how **12.88** % of regulated carbon emissions for which this development is responsible, are proposed to be off-set by various energy efficiency measures compared to a Building Regulations Part L1A 2013 compliant scheme.

The analysis has shown that by incorporating energy efficient construction and installations, there is a significant reduction in the development CO₂ emissions based on the SAP calculation method. The potential on-site low and zero carbon technologies have also been assessed taking into account the scale of this particular development and constraints such as location, visual impact, preventing additional vehicle movements and local pollution concerns.

A summary of the results of the Standard Case SAP 2012 TER and DER figures for each house type are included in **APPENDIX A**

APPENDIX A - SAP 2012 TER and DER WORKSHEETS



Property Reference	001					Iss	ued on Date	25/03/2019
Assessment	lots 1-4, 6 and	d 7			Prop Type Re	f 2 be	ed semi	
Reference								
Property	irs Wood Clos	se, Northav	w, Potters Bar	, EN7 4BY				
SAP Rating			85 B	DER	15.39)	TER	18.30
Environmental	Environmental						15.90	
CO ₂ Emissions (t/year)			1.06	DFEE	38.19		TFEE	52.50
General Requirements Co	ompliance		Pass	% DFEE <tfee< td=""><td></td><td></td><td>27.25</td><td></td></tfee<>			27.25	
Assessor Details Mrs.	Nicola Battist	a, Monitor	Energy Cons	ultancy, Tel: 017	52830291,		Assessor ID	L706-0001
	a@monitor-e							
Client								
SUMMARY FOR INPUT DA	TA FOR: New	Build (As	Designed)					
Orientation	S	outh West						
Property Tenure	0)wner-occup	oied					
Transaction Type	N	Iew dwelling	3					
Terrain Type	S	uburban						
1.0 Property Type	H	louse, Semi-	-Detached					
2.0 Number of Storeys	2							
3.0 Date Built	<u> </u>	019						
4.0 Sheltered Sides	2							
5.0 Sunlight/Shade	<u>[A</u>	verage or u	nknown					
6.0 Measurements				Heat Loss Perimet	er Interna	al Elgar	. Aros Av	erage Storey Height
		Gro	ound Floor:	18.30 m		1.60 m ²		2.40 m
			1st Storey:	18.30 m	4:	1.60 m²	2	2.60 m
7.0 Living Area	1	9.49			m²			
8.0 Thermal Mass Parameter	r Si	imple calcul	ation - Mediun	1				
Thermal Mass	2	50.00			kJ/m²K			
9.0 External Walls								
Description	Туре	Cons	truction			-Value	Gross Area	Nett Area
External Wall 1	Cavity Wall	Cavit	v wall · nlasterho	ard on dabs, AAC blo	•	V/m²K) 0.13	(m²) 43.92	(m²) 33.98
External Wall I	-	cavity	y, any outside str	ucture		0.13	43.32	33.30
External Wall 2	Cavity Wall		ry wall : plasterbo y, any outside str	ard on dabs, AAC blo ucture	ock, filled	0.11	47.58	40.98
0.1 Party Walls			,, ,					
9.1 Party Walls Description	Туре	Cons	truction				U-Value	Area
							(W/m ² K)	(m²)
Party Wall 1	Filled Cavity w Edge Sealing	vith Dense cavity		des. lightweight aggr	egate blocks, cav	ity or	0.00	42.50
10.0 External Roofs								
Description	Туре	Cons	truction		ι	I-Value	Gross Area	Nett Area
5. 10.64	5				()	V/m²K)	(m²)	(m²)
External Roof 1	External Plane	e Koot Plaste	erboard, insulate	a at ceiling level		0.11	41.60	41.60
11.0 Heat Loss Floors	-							
Description	Туре	Cons	truction				U-Value (W/m²K)	Area (m²)
Heat Loss Floor 1	Ground Floor	- Solid Slab	on ground, scree	d over insulation			0.12	41.60





12.0 Opening Types Description	Data Source	Туре	Glazing		Glazing Gap	Argon Filled	G-val	ue	Frame Type	Frame Factor	U Value (W/m²K
Opening Type 1	Manufacture	Solid Door			Gup	rinca			Турс	ractor	1.40
Opening Type 2	r Manufacture r	Window	Double Low-E	Hard 0.15			0.72	2		0.70	1.40
13.0 Openings											
Name Open	ing Type	Location	Orientation	Curtain Type	Overhang Ratio	Wide Overhang	Width (m)	Heigh (m)	t Count	Area (m²)	Curtain Closed
Opening 1 Solid	Door	[1] External Wall	1 South West							2.16	
Opening 2 Wind	ow	[1] External Wall	1 South West	None	0.00					2.16	
Opening 3 Wind		[2] External Wall		None	0.00					2.16	
Opening 4 Wind		[2] External Wall	_	None	0.00					0.76	
Opening 5 Wind		[2] External Wall		None	0.00					0.76	
Opening 6 Wind		[2] External Wall		None	0.00					2.16	
Opening 7 Wind		[1] External Wall		None	0.00					0.76	
Opening 8 Wind Opening 9 Wind		[2] External Wall [1] External Wall		None	0.00					0.76	
Opening 9 Wind Opening 10 Wind		[1] External Wall		None	0.00					4.10	
Opening 10 Willia	OW	[1] LXternal vvali	1 North West	None	0.00					0.76	
4.0 Conservatory		None									
L5.0 Draught Proofing		100				%					
L6.0 Draught Lobby		No									
17.0 Thermal Bridging		Calculate	Bridges								
7.1 List of Bridges											
Source Type	Bridge	Туре			Length	Psi	Imported	I			
Independently assesse	d E2 Oth	er lintels (includir	g other steel lintels)	8.93	0.050	Yes				
Independently assesse	d E3 Sill				7.93	0.030	Yes				
Independently assesse		b			26.50	0.020	Yes				
Independently assesse		und floor (normal	•		18.30	0.050	No				
Independently assesse		rmediate floor wi			18.30	0.000	No				
Independently assesse		ves (insulation at			9.80	0.050	No				
Independently assesse		ble (insulation at	ceiling level)		8.50	0.050	No				
Independently assesse		rner (normal)	al a III a a a		10.00	0.040	Yes				
Table K1 - Approved		rty wall between			10.00	0.060	Yes				
Independently assesse Table K1 - Default		y wall - Ground fl	iate floor within a		8.50 8.50	0.040	No No				
	dwellin	g		1)							
Independently assesse	d P4 Part		ulation at ceiling lev	eI)	8.50	0.050	No				
Y-value		0.028				W/m²K					
18.0 Pressure Testing		Yes									
Designed AP₅o		5.00				$m^3/(h.m^2)$) @ 50 Pa	а			
Property Tested ?											
As Built AP ₅₀						$m^3/(h.m^2$) @ 50 Pa	a			
19.0 Mechanical Ventila	ntion										
Summer Overheating	ng										
Windows on and	n hot weathe	r Wind	ows half open								
windows open i		Yes									
Cross ventilation						=					
Cross ventilation		No									
Cross ventilation Night Ventilation		No 4.00									
Cross ventilation	1	No 4.00									





20.0 Fans, Open Fireplaces, Flues				
	MHS	SHS	Other	Total
Number of Chimneys Number of open flues	0		0	0
Number of open flues Number of intermittent fans	U		U	3
Number of passive vents				0
Number of flueless gas fires				0
21.0 Fixed Cooling System	No			
22.0 Lighting				
Internal				
Total number of light fittings	12			
Total number of L.E.L. fittings	12			
Percentage of L.E.L. fittings	100.00			%
External				
External lights fitted	No			
23.0 Electricity Tariff	Standard			
24.0 Main Heating 1	Database			
Percentage of Heat	100			%
Database Ref. No.	17953			
Fuel Type	Mains gas			
Main Heating	BGW			
SAP Code	104			
In Winter	90.6			
In Summer	87.1			
Controls	CBI Time and te	emperature zoi	ne control	
PCDF Controls	0			
Delayed Start Stat	No			
Sap Code	2110			
Boiler Compensator	Vaillant Group	UK Ltd, Vaillan	t, VRT 350	
Flue Type	Balanced			
Fan Assisted Flue	Yes			
Is MHS Pumped	Pump in heated	d space		
Heat Emitter	Radiators and U	Jnderfloor		
Underfloor Heating	Yes - Pipes in th	nin screed		
Flow Temperature	Normal (> 45°C	:)		
Combi boiler type	Standard Comb	oi		
Combi keep hot type	None			
25.0 Main Heating 2	None			
Community Heating	Nicon			
Community Heating	None	- h		
28.0 Water Heating	HWP From mai			
Water Heating	Main Heating 1	•		
Flue Gas Heat Recovery System	Yes			
Waste Water Heat Recovery Instantaneous System 1	No			
Waste Water Heat Recovery	No			





29.0 Hot Water Cylinder	None]
28.1 Flue Gas Heat Recovery System		
SAP Code	901	
Water use <= 125 litres/person/day	Yes	
Solar Panel	No	
Storage System		-
Waste Water Heat Recovery	No	
ilistalitalieous system z		

Recommendations

Lower cost measures

None

Further measures to achieve even higher standards

ittilet illeasures to actileve even illgilet ste	andaras						
	Typical Cost	Typical savings	ngs Ratings after improvement				
	Typical Cost	per year	SAP rating	Environmental Impact			
Solar water heating	£4,000 - £6,000	£29	B 87				
	Typical Cost	Typical savings	Ratings a	fter improvement			
	Typical Cost	per year	SAP rating	Environmental Impact			
Solar photovoltaic panels, 2.5 kWp	£5,000 - £8,000	£308	A 97				





Property Reference	005					Issu	ued on Date	30/04/2	2019	
Assessment	Plot 5	Plot 5 Prop Type Ref 3 Bed detached								
Reference										
Property	Firs Wood C	Close, Northa	w, Potters Bar,	, EN7 4BY						
SAP Rating			85 B	DER	15.4	40	TER	17.	07	
Environmental			88 B	% DER <ter< td=""><td></td><td></td><td>9.79</td><td></td><td></td></ter<>			9.79			
CO₂ Emissions (t/year	r)		1.24	DFEE	38.6	50	TFEE	50.0	01	
General Requirement	ts Compliance		Pass	% DFEE <tfee< td=""><td></td><td></td><td>22.82</td><td></td><td></td></tfee<>			22.82			
	Ars. Nicola Bat nicola@monito		r Energy Consu	ultancy, Tel: 017	52830291,		Assessor ID	L706-0	001	
Client						<u> </u>				
SUMMARY FOR INPUT	Γ DATA FOR: N	ew Build (As	Designed)							
Orientation		South West]					
Property Tenure		Owner-occup	pied		j					
Transaction Type		New dwelling	g]					
Terrain Type		Suburban			j					
1.0 Property Type		House, Detai	ched		j					
2.0 Number of Storeys		2			ĺ					
3.0 Date Built		2019								
4.0 Sheltered Sides		3			j					
5.0 Sunlight/Shade		Average or u	nknown		j					
6.0 Measurements										
			H	Heat Loss Perimet	er Inter	nal Floor	Area Av	erage Storey H	leight	
		Gr	ound Floor:	28.70 m		48.15 m ²		2.40 m		
			1st Storey:	28.70 m		48.15 m ²		2.60 m		
7.0 Living Area		19.76			m²					
8.0 Thermal Mass Param	eter	Simple calcul	lation - Medium	l]					
Thermal Mass		250.00			kJ/m²K					
9.0 External Walls										
Description	Туре	Cons	struction			U-Value (W/m²K)	Gross Area (m²)	Nett Area (m²)		
External Wall 1	Cavity Wa		ty wall : plasterboay, any outside stru	ard on dabs, AAC bloucture	ock, filled	0.13	92.20	73.36		
9.1 Party Walls Description	Туре	Cons	struction				U-Value	Area		
							(W/m²K)	(m²)		
10.0 External Roofs	_									
Description	Туре	Cons	struction			U-Value (W/m²K)	Gross Area (m²)	Nett Area (m²)		
External Roof 1	External P	lane Roof Plast	erboard, insulated	d at ceiling level		0.11	48.18	48.18		
11.0 Heat Loss Floors Description	Туре	Cons	struction				U-Value (W/m²K)	Area (m²)		
			struction on ground, screed	d over insulation			U-Value (W/m²K) 0.12	Area (m²) 48.15		





Description	Data Source		Glazing		Glazing Gap	Argon Filled	G-val		rame Гуре	Frame Factor	U Valu (W/m²l
Opening Type 1	Manufacture r	e Solid Door									1.40
Opening Type 2	Manufacture r	e Window	Double Low-E	Hard 0.15			0.72	2		0.70	1.40
3.0 Openings											
Name	Opening Type	Location	Orientation	Curtain Type	Overhang Ratio	Wide Overhang	Width (m)	Height (m)	Count	Area (m²)	Curtair Closed
Opening 1	Solid Door	[1] External Wall 1	South West							2.05	
Opening 2	Window	[1] External Wall 1	South West	None	0.00					1.89	
Opening 3	Window	[1] External Wall 1	South West	None	0.00					2.16	
Opening 4	Window	[1] External Wall 1	South West	None	0.00					0.76	
Opening 5	Window Window	[1] External Wall 1	North East	None	0.00					4.00	
Opening 6	Window	[1] External Wall 1 [1] External Wall 1	North East	None	0.00					1.02	
Opening 7 Opening 8	Window	[1] External Wall 1	North East	None	0.00					4.32	
Opening 9	Window	[1] External Wall 1	South East North West	None None	0.00					1.32 1.32	
			North West	None	0.00					1.52	
4.0 Conservatory		None									
5.0 Draught Proo	fing	100				%					
.6.0 Draught Lobb	У	No									
.7.0 Thermal Bridg	ging	Calculate Br	ridges								
7.1 List of Bridges	S										
Source Type	Bridge				Length		Imported				
Independently as		ner lintels (including o	other steel lintels	5)	9.87	0.050	Yes				
Independently as					8.87	0.040	Yes				
Independently as					25.00	0.020	Yes				
Independently as		ound floor (normal)			28.70	0.130	No				
Independently as		ermediate floor withi	_		28.70	0.000	No				
Independently as		aves (insulation at cei			18.00	0.060	No				
Independently as		able (insulation at ce	iling level)		10.70	0.100	No				
Independently as	ssessed E16 Co	orner (normal)			20.00	0.040	No				
Y-value		0.043				W/m²K					
8.0 Pressure Test	ing	Yes									
Designed AP ₅₀		5.00				$m^3/(h.m^2)$	@ 50 Pa	9			
Property Teste	d ?										
As Built AP ₅₀						$m^3/(h.m^2)$) @ 50 Pa	a			
9.0 Mechanical V	entilation										
Summer Overh	neating										
Windows o	pen in hot weath	er Window	vs half open								
Cross venti	lation possible	No									
Night Vent	ilation	No				_					
Air change		2.50				=					
Mechanical Ve											
	Ventilation System P	Present No									
0.0 Fans, Open Fi	replaces, Flues	MHS	SHS		Other	Total					
Number of Chi	mneys	0		·	0	0					
		0			0	0					
Number of ope											
Number of ope	ermittent fans					3					
						3					





21.0 Fixed Cooling System	No	
22.0 Lighting		
Internal		
Total number of light fittings	12	
Total number of L.E.L. fittings	12	
Percentage of L.E.L. fittings	100.00	%
External		
External lights fitted	No	
23.0 Electricity Tariff	Standard	
24.0 Main Heating 1	Database	
Percentage of Heat	100	%
Database Ref. No.	16842	
Fuel Type	Mains gas	
Main Heating	BGW	
SAP Code	104	
In Winter	90.2	
In Summer	87.0	
Controls	CBI Time and temperature zone control	
PCDF Controls	0	
Delayed Start Stat	No	
Sap Code	2110	
Boiler Compensator	Vaillant Group UK Ltd, Vaillant, VRT 350	
Flue Type	Balanced	
Fan Assisted Flue	Yes	
Is MHS Pumped	Pump in heated space	
Heat Emitter	Radiators and Underfloor	
Underfloor Heating	Yes - Pipes in thin screed	
Flow Temperature	Normal (> 45°C)	
Combi boiler type	Standard Combi	
Combi keep hot type	None	
25.0 Main Heating 2	None	
Community Heating	None	
28.0 Water Heating	HWP From main heating 1	
Water Heating	Main Heating 1	
Flue Gas Heat Recovery System	No	
Waste Water Heat Recovery Instantaneous System 1	No	
Waste Water Heat Recovery Instantaneous System 2	No	
Waste Water Heat Recovery Storage System	No	
Solar Panel	No	
Water use <= 125 litres/person/day	Yes	
SAP Code	901	





29.0 Hot Water Cylinder

None

Recommendations

Lower cost measures

Solar water heating

None

Further measures to achieve even higher standards

Solar photovoltaic panels, 2.5 kWp

Typical Cost

Typical savings per year

Ratings after improvement SAP rating Environmental Impact

£4,000 - £6,000

£31 B 86

Ratings after improvement

Typical Cost

£5,000 - £8,000

Typical savings per year £308

SAP rating Environmental Impact

A 96





Property Reference	001					Iss	ued on Date	30/04/2019
Assessment	Plots 8 and 11				Prop Type Re	ef 2 be	ed semi	
Reference								
Property	Firs Wood Clo	se, Northav	w, Potters Bar	, EN7 4BY				
SAP Rating			85 B	DER	15.3	4	TER	18.25
Environmental			88 B	% DER <ter< td=""><td></td><td></td><td>15.94</td><td></td></ter<>			15.94	
CO ₂ Emissions (t/year)			1.06	DFEE	38.23	3	TFEE	52.41
General Requirements C	ompliance		Pass	% DFEE <tfee< td=""><td></td><td></td><td>27.07</td><td></td></tfee<>			27.07	
Assessor Details Mrs.	. Nicola Battis	ta, Monitor	Energy Cons	ultancy, Tel: 017	52830291,		Assessor ID	L706-0001
	la@monitor-e							
Client								
SUMMARY FOR INPUT DA	ATA FOR: Nev	v Build (As	Designed)					
Orientation	V	West						
Property Tenure	C	Owner-occup	oied					
Transaction Type	N	New dwelling	5					
Terrain Type	S	Suburban						
1.0 Property Type	<u> </u>	House, Semi-	Detached					
2.0 Number of Storeys	2							
3.0 Date Built	<u> </u>	2019						
4.0 Sheltered Sides	[2							
5.0 Sunlight/Shade	<u> </u>	Average or u	nknown					
6.0 Measurements				Heat Loss Perimet	or Intorn	al Floor	· Aroa Av	erage Storey Height
		Gr	ound Floor:	18.30 m		1.60 m ²		2.40 m
			1st Storey:	18.30 m	4	1.60 m ²	2	2.60 m
7.0 Living Area	1	19.49			m²			
8.0 Thermal Mass Paramete	r S	Simple calcul	ation - Medium	1				
Thermal Mass	2	250.00			kJ/m²K			
9.0 External Walls								
Description	Туре	Cons	truction			J-Value	Gross Area	Nett Area
External Wall 1	Cavity Wall	Cavit	v wall : plasterho	ard on dabs, AAC blo		W/m²K) 0.13	(m²) 43.92	(m²) 33.98
External Wall 1	Cavity Wall	cavit	y, any outside str	ucture		0.13	43.32	33.56
External Wall 2	Cavity Wall		y wall : plasterbo y, any outside str	ard on dabs, AAC blo	ock, filled	0.11	47.58	40.98
0.1 Down Malla			,, - ,					
9.1 Party Walls Description	Туре	Cons	truction				U-Value	Area
							(W/m ² K)	(m²)
Party Wall 1	Filled Cavity v Edge Sealing	with Dens cavit		les. lightweight aggre	egate blocks, ca	vity or	0.00	42.50
10.0 External Roofs								
Description	Туре	Cons	truction		ı	J-Value	Gross Area	Nett Area
5	5	5 6 51 1			(1	W/m²K)		(m²)
External Roof 1	External Plan	e Koot Plast	erboard, insulate	a at ceiling level		0.11	41.60	41.60
11.0 Heat Loss Floors	Tomas	0.					1137-1 -	Aven
Description	Туре	Cons	truction				U-Value (W/m²K)	Area (m²)
Heat Loss Floor 1	Ground Floor	- Solid Slab	on ground, scree	d over insulation			0.12	41.60





12.0 Opening Type Description	es Data Source	Туре	Glazing		Glazing Gap	Argon Filled	G-val	ue	Frame Type	Frame Factor	U Value (W/m²K
Opening Type 1	Manufacture	Solid Door			Gup	Tilled			Type	ractor	1.40
Opening Type 2	r Manufacture r	Window	Double Low-E	Hard 0.15			0.72			0.70	1.40
13.0 Openings											
Name	Opening Type	Location	Orientation	Curtain Type	Overhang Ratio	Wide Overhang	Width (m)	Heigh (m)	t Count	Area (m²)	Curtain Closed
Opening 1	Solid Door	[1] External Wall 1	West							2.16	
Opening 2	Window	[1] External Wall 1	West	None	0.00					2.16	
Opening 3	Window	[2] External Wall 2	West	None	0.00					2.16	
Opening 4		[2] External Wall 2	West	None	0.00					0.76	
Opening 5		[2] External Wall 2	East	None	0.00					0.76	
Opening 6		[2] External Wall 2	East	None	0.00					2.16	
Opening 7		[1] External Wall 1	East	None	0.00					0.76	
Opening 8		[2] External Wall 2	North	None	0.00					0.76	
Opening 9		[1] External Wall 1	East	None	0.00					4.10	
Opening 10	Window	[1] External Wall 1	North	None	0.00					0.76	
L4.0 Conservatory	/	None									
L5.0 Draught Prod	ofing	100				%					
16.0 Draught Lobb	by	No									
17.0 Thermal Brid	ging	Calculate B	ridges								
.7.1 List of Bridge	es .										
Source Type	Bridge	Туре		I	Length	Psi	Imported	ı			
Independently a		er lintels (including	other steel lintels	5)	8.93	0.050	Yes				
Independently a						0.030	Yes				
Independently a			26.50			0.020	Yes				
Independently a		und floor (normal)			18.30	0.050	No				
Independently a		rmediate floor with	_		18.30	0.000	No				
Independently a		ves (insulation at ce			9.80	0.050	No				
Independently a		ble (insulation at co	elling level)		8.50	0.050	No				
Independently a Table K1 - Appro		rner (normal) rty wall between dv	vollings		10.00 10.00	0.040	Yes Yes				
Independently a		y wall - Ground floo			8.50	0.040	No				
Table K1 - Defau		y wall - Intermedia			8.50	0.000	No				
	dwellir	Ig		1)							
Independently a	assessed P4 Pan	xy wall - Roof (insula	ation at ceiling lev	/ei)	8.50	0.050	No				
Y-value		0.028				W/m²K					
18.0 Pressure Test	ting	Yes									
Designed AP ₅₀)	5.00				$m^3/(h.m^2$) @ 50 P	a			
Property Teste	ed ?										
As Built AP ₅₀						$m^3/(h.m^2$) @ 50 P	а			
19.0 Mechanical V	/entilation										
Summer Over	heating										
Windows	open in hot weathe	r Windo	ws half open								
Cross vent	ilation possible	Yes				$\bar{\Box}$					
Night Vent	tilation	No									
		4.00									
Air change	rate	14.00									
Air change Mechanical Ve		4.00									





20.0 Fans, Open Fireplaces, Flues				
	MHS	SHS	Other	Total
Number of Chimneys Number of open flues	0		0	0
Number of open flues Number of intermittent fans	U		U	3
Number of passive vents				0
Number of flueless gas fires				0
21.0 Fixed Cooling System	No			
22.0 Lighting				
Internal				
Total number of light fittings	12			
Total number of L.E.L. fittings	12			
Percentage of L.E.L. fittings	100.00			%
External				
External lights fitted	No			
23.0 Electricity Tariff	Standard			
24.0 Main Heating 1	Database			
Percentage of Heat	100			%
Database Ref. No.	17953			
Fuel Type	Mains gas			
Main Heating	BGW			
SAP Code	104			
In Winter	90.6			
In Summer	87.1			
Controls	CBI Time and te	emperature zoi	ne control	
PCDF Controls	0			
Delayed Start Stat	No			
Sap Code	2110			
Boiler Compensator	Vaillant Group	UK Ltd, Vaillan	t, VRT 350	
Flue Type	Balanced			
Fan Assisted Flue	Yes			
Is MHS Pumped	Pump in heated	d space		
Heat Emitter	Radiators and U	Jnderfloor		
Underfloor Heating	Yes - Pipes in th	nin screed		
Flow Temperature	Normal (> 45°C	:)		
Combi boiler type	Standard Comb	oi		
Combi keep hot type	None			
25.0 Main Heating 2	None			
Community Heating	Nicon			
Community Heating	None	- h		
28.0 Water Heating	HWP From mai			
Water Heating	Main Heating 1	•		
Flue Gas Heat Recovery System	Yes			
Waste Water Heat Recovery Instantaneous System 1	No			
Waste Water Heat Recovery	No			





Environmental Impact

	Typical Cost	Typical savings	•	ofter improvement
Further measures to achieve even high	gher standards			
None				
Lower cost measures				
Recommendations				
29.0 Hot Water Cylinder	None			
28.1 Flue Gas Heat Recovery System				
SAP Code	901			
Water use <= 125 litres/person/day	Yes			
Solar Panel	No			
Waste Water Heat Recovery Storage System	No			
mistaritarieous system 2				

£4,000 - £6,000

per year

£29

SAP rating

B 87



Solar water heating



Property Reference	009					Issued on Dat	e 30/04/2019
Assessment	Plots 9 and	10			Prop Type Ref	3 Bed semi next	to 2 bed
Reference						_	
Property	Firs Wood	Close, No	rthaw, Potters	Bar, EN7 4BY			
SAP Rating			85 B	DER	15.32	TER	17.12
Environmental			88 B	% DER <ter< td=""><td>R</td><td>10.53</td><td></td></ter<>	R	10.53	
CO₂ Emissions (t/ye	ar)		1.24	DFEE	38.20	TFEE	50.16
General Requireme	nts Compliance	:	Pass	% DFEE <tf< td=""><td>EE</td><td>23.84</td><td></td></tf<>	EE	23.84	
Assessor Details	Mrs. Nicola Ba nicola@monito			onsultancy, Tel: 0	1752830291,	Assessor IE	L706-0001
Client							
SUMMARY FOR INPU	JT DATA FOR: N	New Build	l (As Designed)				
Orientation		West					
Property Tenure		Owner-	occupied				
Transaction Type		New dw					
Terrain Type		Suburba					
1.0 Property Type		House,	Semi-Detached		_		
2.0 Number of Storeys		2			_		
3.0 Date Built		2019			_		
4.0 Sheltered Sides		2			=		
5.0 Sunlight/Shade		Average	e or unknown				
6.0 Measurements		10.75	Ground Floor 1st Storey		48.	Floor Area Av .15 m ²	verage Storey Height 2.40 m 2.60 m
7.0 Living Area		19.76			m²		
8.0 Thermal Mass Para	meter		calculation - Med	dium			
Thermal Mass		250.00			kJ/m²K		
9.0 External Walls Description	Туре		Construction			Value Gross Area /m²K) (m²)	Nett Area (m²)
External Wall 1	Cavity Wa	all	Cavity wall : plast cavity, any outsid	erboard on dabs, AAC e structure	block, filled (0.13 101.00	83.48
9.1 Party Walls Description	Туре		Construction			U-Value (W/m²K)	Area (m²)
Party Wall 1	Solid Wal	I	Dense plaster bot	th sides, dense blocks,	cavity or cavity fill	0.00	42.50
10.0 External Roofs Description	Туре		Construction			Value Gross Area /m²K) (m²)	Nett Area (m²)
External Roof 1	External	Plane Roof	Plasterboard, insu	ulated at ceiling level).11 48.15	48.15
11.0 Heat Loss Floors Description	Туре		Construction			U-Value (W/m²K)	Area (m²)
Heat Loss Floor 1	Ground F	loor - Solid	Slab on ground, s	creed over insulation		0.12	(m ⁻) 48.15



12.0 Opening Types



Description	Data Source	Туре		Glazing		Glazing Gap	Argon Filled	G-val		rame Type	Frame Factor	U Value (W/m²K)
Opening Type 1		e Solid I	Door									1.40
Opening Type 2	r Manufacture r	e Windo	ow	Double Low-E	Hard 0.15			0.72	2		0.70	1.40
13.0 Openings												
Name	Opening Type	Location		Orientation	Curtain Type	Overhang Ratio	Wide Overhang	Width (m)	Height (m)	Count	Area (m²)	Curtain Closed
Opening 1	Solid Door		rnal Wall 1	West		0.00					2.05	
Opening 2	Window		rnal Wall 1	West	None	0.00					1.89	
Opening 3	Window		rnal Wall 1	West	None	0.00					2.16	
Opening 4	Window		rnal Wall 1	West	None	0.00					0.76	
Opening 5	Window		rnal Wall 1	East	None	0.00					4.00	
Opening 6	Window		rnal Wall 1	East	None	0.00					1.02	
Opening 7	Window		rnal Wall 1	East	None	0.00					4.32	
Opening 8	Window	[1] Exte	rnal Wall 1	South	None	0.00					1.32	
14.0 Conservatory	У	Ν	lone									
15.0 Draught Prod	15.0 Draught Proofing						%					
16.0 Draught Lobi	by	Ν	No.									
17.0 Thermal Brid	lging	C	Calculate Bri	dges								
17.1 List of Bridge	es	_										
Source Type	Bridge					Length	Psi	Imported				
Independently a	assessed E2 Oth	er lintel	s (including ot	ther steel lintels)	9.87	0.050	Yes				
Independently a						8.87	0.040	Yes				
Independently a		nb				25.00	0.020	Yes				
Independently assessed E5 Ground floor (normal) 20.20				0.130	No							
	Independently assessed E6 Intermediate floor within a dwelling 20.20					0.000	No					
Independently a	assessed E10 Ea	ives (insu	ulation at ceili	ng level)		9.50	0.060	No				
Independently a		•	ulation at ceili	ing level)		10.70	0.100	No				
Independently a		orner (no				15.00	0.040	No				
Table K1 - Appro			between dwe	ellings		5.00	0.060	No				
Independently a		•	Ground floor			8.50	0.040	No				
Independently a	dwelli	ng		floor within a		8.50	0.000	No				
Independently a	assessed P4 Par	ty wall -	Roof (insulati	on at ceiling lev	el)	8.50	0.050	No				
Y-value		С).037				W/m²K					
18.0 Pressure Tes	ting	Υ	'es									
Designed AP ₅₀)	5	5.00				$m^3/(h.m^2)$	@ 50 Pa	3			
Property Teste	ed ?											
As Built AP ₅₀							$m^3/(h.m^2)$	@ 50 Pa	a			
19.0 Mechanical \	/entilation											
Summer Over	heating											
Windows	open in hot weathe	er	Windows	half open								
Cross vent	tilation possible		No									
Night Ven	tilation		No				-					
Air change			2.50				Ħ					
Mechanical V												
	Ventilation System P	resent	No									
20.0 Fans, Open F	ireplaces. Flues											
			MHS	SHS	(Other	Total					
Number of Ch	imneys		0			0	0					





Number of open flues Number of intermittent fans Number of passive vents Number of flueless gas fires	0 0	0 3 0 0
21.0 Fixed Cooling System	No	
22.0 Lighting		
Internal		
Total number of light fittings	12	
Total number of L.E.L. fittings	12	
Percentage of L.E.L. fittings	100.00	%
External		
External lights fitted	No	
23.0 Electricity Tariff	Standard	
24.0 Main Heating 1	Database	
Percentage of Heat	100	<u> </u>
Database Ref. No.	16842	
Fuel Type	Mains gas	
Main Heating	BGW	
SAP Code	104	
In Winter	90.2	
In Summer	87.0	
Controls	CBI Time and temperature zone control	
PCDF Controls	0	
Delayed Start Stat	No	
Sap Code	2110	
Boiler Compensator	Vaillant Group UK Ltd, Vaillant, VRT 350	
Flue Type	Balanced	
Fan Assisted Flue	Yes	
Is MHS Pumped	Pump in heated space	
Heat Emitter	Radiators and Underfloor	
Underfloor Heating	Yes - Pipes in thin screed	
Flow Temperature	Normal (> 45°C)	
Combi boiler type	Standard Combi	
Combi keep hot type	None	
25.0 Main Heating 2	None	
Community Heating	None	
28.0 Water Heating	HWP From main heating 1	
Water Heating	Main Heating 1	
Flue Gas Heat Recovery System	No	
Waste Water Heat Recovery Instantaneous System 1	No	
Waste Water Heat Recovery	No	



Instantaneous System 2 Waste Water Heat Recovery

Storage System

No



Solar Panel	No	
Water use <= 125 litres/person/day	Yes	
SAP Code	901	
29.0 Hot Water Cylinder	None	

Recommendations

Lower cost measures

None

Further measures to achieve even higher standards

	Typical Cost	Typical savings	Ratings after improvement			
	Typical Cost	per year	SAP rating	Environmental Impact		
Solar water heating	£4,000 - £6,000	£31	B 87			
	Typical Cost	Typical savings	Ratings a	fter improvement		
	Typical Cost	per year	SAP rating	Environmental Impact		
Solar photovoltaic panels, 2.5 kWp	£5,000 - £8,000	£308	A 96			





Property Reference	012				Issu	ed on Date	30/04/2019
Assessment	Plots 12 and 13			Prop Type Re	3 Be	d semi	
Reference							
Property	Firs Wood Close, No	orthaw, Potters Ba	ar, EN7 4BY				
SAP Rating		86 B	DER	15.07	1	ΓER	16.90
Environmental		88 B	% DER <ter< td=""><td></td><td></td><td>10.85</td><td></td></ter<>			10.85	
CO ₂ Emissions (t/year)		1.22	DFEE	36.94	1	ΓFEE	48.88
General Requirements	Compliance	Pass	% DFEE <tfee< td=""><td></td><td></td><td>24.43</td><td></td></tfee<>			24.43	
	rs. Nicola Battista, Mo cola@monitor-ec.co.		sultancy, Tel: 017	52830291,		Assessor ID	L706-0001
Client							
SUMMARY FOR INPUT	DATA FOR: New Buil	d (As Designed)					
Orientation	North	West]			
Property Tenure		-occupied					
Transaction Type	New d	welling					
Terrain Type	Suburb	oan					
1.0 Property Type	House,	Semi-Detached					
2.0 Number of Storeys	2						
3.0 Date Built	2019						
4.0 Sheltered Sides	2						
5.0 Sunlight/Shade	Averag	Average or unknown					
6.0 Measurements							
			Heat Loss Perimet			Area Av	erage Storey Height
		Ground Floor: 1st Storey:	19.70 m 19.70 m		3.15 m ² 3.15 m ²		2.40 m 2.60 m
		130 300104.	15.70111		.13 111		2.00 111
7.0 Living Area	19.76			m²			
8.0 Thermal Mass Parame		calculation - Mediu					
Thermal Mass	250.00			kJ/m²K			
9.0 External Walls Description	Туре	Construction			-Value //m²K)	Gross Area (m²)	Nett Area (m²)
External Wall 1	Cavity Wall		board on dabs, AAC blo	ock, filled	0.13	80.30	62.78
External Wall 2	Cavity Wall	cavity, any outside s Cavity wall : plasteri cavity, any outside s	board on dabs, AAC blo	ock, filled	0.11	18.20	18.20
9.1 Party Walls Description	Туре	Construction				U-Value (W/m²K)	Area (m²)
Party Wall 1	Solid Wall	Dense plaster both	sides, dense blocks, ca	vity or cavity fill		0.00	45.00
10.0 External Roofs Description	Туре	Construction	onstruction (Nett Area (m²)
External Roof 1	External Plane Roof	Plasterboard, insula	ted at ceiling level		0.11	48.15	48.15
11.0 Heat Loss Floors Description	Туре	Construction				U-Value (W/m²K)	Area (m²)
Heat Loss Floor 1	Ground Floor - Solid	Slab on ground, scre	eed over insulation			0.12	48.15





12.0 Opening Ty Description		Source	Туре		Glazing		Glazing Gap	Argon Filled		ue	Frame Type	Frame Factor	U Value (W/m²K)
Opening Type		ufacture	Solid	Door							71.		1.40
Opening Type	r 2 Manu r	ufacture	Wind	OW	Double Low-E	Hard 0.15			0.7	2		0.70	1.40
13.0 Openings													
Name	Opening Typ	pe I	Locatio	n	Orientation	Curtain Type	Overhang Ratio	Wide Overhans	Width (m)	Heigh (m)	t Count	Area (m²)	Curtain Closed
Opening 1	Solid Door	[[1] Exte	rnal Wall 1	North West	.,,,,	Hatio	Overnang	5 (,	(,		2.05	ciosca
Opening 2	Window	[[1] Exte	rnal Wall 1	North West	None	0.00					1.89	
Opening 3	Window	[[1] Exte	rnal Wall 1	North West	None	0.00					2.16	
Opening 4	Window	[[1] Exte	rnal Wall 1	North West	None	0.00					0.76	
Opening 5	Window	[[1] Exte	rnal Wall 1	South East	None	0.00					4.00	
Opening 6	Window	[[1] Exte	rnal Wall 1	South East	None	0.00					1.02	
Opening 7	Window	[[1] Exte	rnal Wall 1	South East	None	0.00					4.32	
Opening 8	Window	[[1] Exte	rnal Wall 1	North East	None	0.00					1.32	
14.0 Conservato	ory		-	None									
15.0 Draught Pro	oofing			L00				%					
16.0 Draught Lol	_			No									
17 O Thousal Bui	· idaina			Calaulata Dri	dana								
17.0 Thermal Bri			L	Calculate Bri	ages								
17.1 List of Bridg Source Type	ges	Bridge '	Typo				Length	Psi	Imported				
	, accossed	_		s (including o	thar staal lintals	٠١	9.87	0.050	Yes	4			
, , ,			8.87	0.040	Yes								
				25.00	0.020	Yes							
Independently							19.70	0.130	No				
Independently				te floor withir	n a dwelling		19.70	0.000	No				
Independently				ulation at ceil			8.20	0.060	No				
Independently				ulation at ceil			11.50	0.100	No				
Independently		E16 Cor			,		10.00	0.040	Yes				
Table K1 - App	roved	E18 Par	ty wall	between dwe	ellings		10.00	0.060	Yes				
Independently	/ assessed	P1 Part	y wall -	Ground floor			9.00	0.040	No				
Independently	y assessed		•	Intermediate	floor within a		9.00	0.000	No				
Independently	y assessed	dwelling P4 Party	_	Roof (insulat	ion at ceiling lev	rel)	9.00	0.050	No				
Y-value			(0.038				W/m²K					
18.0 Pressure Te	esting		Ī,	/es									
Designed AP	_			5.00				m³/(h.m²	²) @ 50 P:	a			
_			F	7.00				111 / (11.111) @ 301	и			
Property Tes			Ļ										
As Built AP ₅₀	1		L					m³/(h.m²	²) @ 50 Pa	a			
19.0 Mechanical	l Ventilation												
Summer Ove	erheating												
Windows	s open in hot	weather	r	Window	s half open								
Cross ver	ntilation possi	ble		No									
Night Ve	ntilation			No				=					
Air chang				2.50				一					
Mechanical V													
	al Ventilation Sy	ustem Dr	ecent	No				\neg					
ivieciiafiic	ai venulduun 3	ysteili Pl	COCIIL	No									

20.0 Fans, Open Fireplaces, Flues





Number of Chimneys Number of open flues Number of intermittent fans Number of passive vents Number of flueless gas fires	MHS 0 0	SHS	Other 0 0	Total 0 0 3 0	
21.0 Fixed Cooling System	No				
22.0 Lighting					
Internal				-	
Total number of light fittings	12				
Total number of L.E.L. fittings	12				
Percentage of L.E.L. fittings	100.00			9 %	
External				-	
External lights fitted	No				
23.0 Electricity Tariff	Standard				
24.0 Main Heating 1	Database				
Percentage of Heat	100				
Database Ref. No.	16842				
Fuel Type	Mains gas				
Main Heating	BGW				
SAP Code	104				
In Winter	90.2				
In Summer	87.0				
Controls	CBI Time and te	emperature zo	ne control		
PCDF Controls	0				
Delayed Start Stat	No				
Sap Code	2110				
Boiler Compensator	Vaillant Group (UK Ltd, Vaillan	it, VRT 350		
Flue Type	Balanced				
Fan Assisted Flue	Yes				
Is MHS Pumped	Pump in heated	l space			
Heat Emitter	Radiators and L	Inderfloor			
Underfloor Heating	Yes - Pipes in th	in screed			
Flow Temperature	Normal (> 45°C))			
Combi boiler type	Standard Comb	i			
Combi keep hot type	None				
25.0 Main Heating 2	None				
Community Hasting				1	
Community Heating	None HWP From mair	n heating 1]]	
28.0 Water Heating]	
Water Heating	Main Heating 1]]	
Flue Gas Heat Recovery System	No No]]	
Waste Water Heat Recovery Instantaneous System 1	INU				
Waste Water Heat Recovery Instantaneous System 2	No				





29.0 Hot Water Cylinder	None	
SAP Code	901	
Water use <= 125 litres/person/d	y Yes	
Solar Panel	No	
Waste Water Heat Recovery Storage System	No	
Waste Water Heat Recovery	No	

Recommendations

Lower cost measures

None

Further measures to achieve even higher standards

	Typical Cost	Typical savings	Ratings after improvement			
	Typical Cost	per year	SAP rating	Environmental Impact		
Solar water heating	£4,000 - £6,000	£31	B 87			
	Typical Cost	Typical savings	Ratings a	fter improvement		
	Typical Cost	per year	SAP rating	Environmental Impact		
Solar photovoltaic panels, 2.5 kWp	£5.000 - £8.000	£308	A 96			





Property Reference	012					Issi	ued on Date	30/04/2019
Assessment	Plots 14-21				Prop Type F	Ref 3 Be	d semi	
Reference								
Property	Firs Wood 0	lose, Nort	thaw, Potters Bar	, EN7 4BY				
SAP Rating			86 B	DER	14.9	96	TER	16.77
Environmental			88 B	% DER <ter< td=""><td></td><td></td><td>10.79</td><td></td></ter<>			10.79	
CO₂ Emissions (t/yea	r)		1.21	DFEE	36.5	52	TFEE	48.21
General Requiremen	ts Compliance		Pass	% DFEE <tfee< td=""><td></td><td></td><td>24.24</td><td></td></tfee<>			24.24	
	Mrs. Nicola Bat nicola@monito		itor Energy Cons	ultancy, Tel: 017	52830291,		Assessor ID	L706-0001
Client								
SUMMARY FOR INPU	T DATA FOR: N	ew Build	(As Designed)					
Orientation		North Eas	st					
Property Tenure		Owner-o	ccupied					
Transaction Type		New dwe	elling					
Terrain Type		Suburbar	١					
1.0 Property Type		House, Se	emi-Detached					
2.0 Number of Storeys		2						
3.0 Date Built		2019						
4.0 Sheltered Sides		2						
5.0 Sunlight/Shade		Average	or unknown					
6.0 Measurements								
			Ground Floor:	Heat Loss Perimetors 19.70 m		nal Floor 48.15 m²		erage Storey Height 2.40 m
			1st Storey:	19.70 m		48.15 m ²		2.60 m
7.0 Living Area		19.76			m²			
8.0 Thermal Mass Paran	neter	Simple ca	alculation - Medium	1				
Thermal Mass		250.00						
9.0 External Walls					kJ/m²K			
Description	Туре				kJ/m²K			
External Wall 1		(Construction			U-Value (W/m²K)	Gross Area (m²)	Nett Area (m²)
	Cavity Wa	II (Construction Cavity wall : plasterbo cavity, any outside str		·,			
9.1 Party Walls Description	Cavity Wa	ll (Cavity wall : plasterbo		·,	(W/m²K)	(m²) 98.50 U-Value	(m²) 80.98 Area
-	,	(Cavity wall : plasterbo cavity, any outside str	ucture	ock, filled	(W/m²K) 0.13	(m²) 98.50	(m²) 80.98
Description	Туре)	Cavity wall : plasterbo cavity, any outside str Construction	ucture	ock, filled vity or cavity fi	(W/m²K) 0.13	(m²) 98.50 U-Value (W/m²K) 0.00	(m²) 80.98 Area (m²) 45.00
Description Party Wall 1 10.0 External Roofs	Type Solid Wall	(Cavity wall : plasterbo cavity, any outside str Construction	ucture les, dense blocks, cav	ock, filled vity or cavity fi	(W/m²K) 0.13	(m²) 98.50 U-Value (W/m²K) 0.00	(m²) 80.98 Area (m²) 45.00
Description Party Wall 1 10.0 External Roofs Description	Type Solid Wall	II (Cavity wall : plasterbo cavity, any outside str Construction Dense plaster both sic	ucture les, dense blocks, cav	ock, filled vity or cavity fi	(W/m²K) 0.13 U-Value (W/m²K)	(m²) 98.50 U-Value (W/m²K) 0.00 Gross Area (m²) 48.15	(m²) 80.98 Area (m²) 45.00 Nett Area (m²) 48.15
Description Party Wall 1 10.0 External Roofs Description External Roof 1 11.0 Heat Loss Floors	Type Solid Wall Type External P	II (Cavity wall : plasterbo cavity, any outside str Construction Dense plaster both sic Construction	ucture les, dense blocks, cav d at ceiling level	ock, filled vity or cavity fi	(W/m²K) 0.13 U-Value (W/m²K)	(m²) 98.50 U-Value (W/m²K) 0.00 Gross Area (m²) 48.15	(m²) 80.98 Area (m²) 45.00 Nett Area (m²) 48.15



12.0 Opening Types



Description	Data Source	е Туре		Glazing		Glazing Gap	Argon Filled	G-val		rame Type	Frame Factor	U Value (W/m²K)
Opening Type 1	Manufactur	e Solid	Door									1.40
Opening Type 2	r Manufactur r	e Wind	ow	Double Low-E	Hard 0.15			0.72	2		0.70	1.40
13.0 Openings												
Name	Opening Type	Locatio	n	Orientation	Curtain Type	Overhang Ratio	Wide Overhang	Width (m)	Height (m)	Count	Area (m²)	Curtain Closed
Opening 1	Solid Door		ernal Wall 1	North East							2.05	
Opening 2	Window		ernal Wall 1	North East	None	0.00					1.89	
Opening 3	Window		ernal Wall 1	North East	None	0.00					2.16	
Opening 4	Window		ernal Wall 1	North East	None	0.00					0.76	
Opening 5	Window		ernal Wall 1	South West	None	0.00					4.00	
Opening 6	Window		ernal Wall 1	South West	None	0.00					1.02	
Opening 7	Window		ernal Wall 1	South West	None	0.00					4.32	
Opening 8	Window	[1] Exte	ernal Wall 1	South East	None	0.00					1.32	
14.0 Conservatory	,	[None									
15.0 Draught Proo	fing	:	100				%					
16.0 Draught Lobb	у		No									
17.0 Thermal Bridg	ging	(Calculate Bri	dges								
17.1 List of Bridge	s											
Source Type	Bridge	е Туре				Length	Psi	Imported				
Independently a	ssessed E2 Ot	her lintel	ls (including of	ther steel lintels)	9.87	0.050	Yes				
Independently a	ssessed E3 Sill					8.87	0.040	Yes				
Independently a	ssessed E4 Jar	nb				25.00	0.020	Yes				
Independently a	ssessed E5 Gr	ound floo	or (normal)			19.70	0.130	No				
Independently a	ssessed E6 Int	ermedia	te floor within	a dwelling		19.70	0.000	No				
Independently a	ssessed E10 E	aves (ins	ulation at ceili	ng level)		8.20	0.060	No				
Independently a	ssessed E12 G	able (ins	ulation at ceili	ing level)		11.50	0.100	No				
Independently a		orner (no				10.00	0.040	Yes				
Table K1 - Appro	ved E18 P	arty wall	between dwe	ellings		10.00	0.060	Yes				
Independently a		rty wall -	Ground floor			9.00	0.040	No				
Independently a	ssessed P2 Pa dwelli	•	Intermediate	floor within a		9.00	0.000	No				
Independently a	ssessed P4 Pa	rty wall -	Roof (insulati	on at ceiling lev	el)	9.00	0.050	No				
Y-value		(0.038				W/m^2K					
18.0 Pressure Test	ing	,	Yes									
Designed AP ₅₀		Ī	5.00				$m^3/(h.m^2)$	@ 50 Pa	a			
Property Teste	d?	Ī										
As Built AP ₅₀							$m^3/(h.m^2)$	@ 50 Pa	9			
19.0 Mechanical V	entilation											
Summer Overl	heating											
Windows o	ppen in hot weath	er	Windows	s half open								
Cross venti	ilation possible		No									
Night Vent			No				一					
Air change			2.50				一					
Mechanical Ve												
	Ventilation System I	Present	No									
20.0 Fans, Open Fi												
20.0 i alia, Opeli Fi	replaces, riues		MHS	SHS		Other	Total					
Number of Chi	mneys		0			0	0					





Number of open flues Number of intermittent fans Number of passive vents Number of flueless gas fires	0 0	0 3 0 0
21.0 Fixed Cooling System	No	
22.0 Lighting		
Internal		
Total number of light fittings	12	
Total number of L.E.L. fittings	12	
Percentage of L.E.L. fittings	100.00	%
External		
External lights fitted	No	
23.0 Electricity Tariff	Standard	
24.0 Main Heating 1	Database	
Percentage of Heat	100	<u> </u>
Database Ref. No.	16842	
Fuel Type	Mains gas	
Main Heating	BGW	
SAP Code	104	
In Winter	90.2	
In Summer	87.0	
Controls	CBI Time and temperature zone control	
PCDF Controls	0	
Delayed Start Stat	No	
Sap Code	2110	
Boiler Compensator	Vaillant Group UK Ltd, Vaillant, VRT 350	
Flue Type	Balanced	
Fan Assisted Flue	Yes	
Is MHS Pumped	Pump in heated space	
Heat Emitter	Radiators and Underfloor	
Underfloor Heating	Yes - Pipes in thin screed	
Flow Temperature	Normal (> 45°C)	
Combi boiler type	Standard Combi	
Combi keep hot type	None	
25.0 Main Heating 2	None	
Community Heating	None	
28.0 Water Heating	HWP From main heating 1	
Water Heating	Main Heating 1	
Flue Gas Heat Recovery System	No	
Waste Water Heat Recovery Instantaneous System 1	No	
Waste Water Heat Recovery	No	



Instantaneous System 2 Waste Water Heat Recovery

Storage System

No



Solar Panel	No	
Water use <= 125 litres/person/day	Yes	
SAP Code	901	
29.0 Hot Water Cylinder	None	

Recommendations

Lower cost measures

None

Further measures to achieve even higher standards

	Typical Cost	Typical savings	Ratings after improvement			
	Typical Cost	per year	SAP rating	Environmental Impact		
Solar water heating	£4,000 - £6,000	£31	B 87			
	Typical Cost	Typical savings	Ratings a	fter improvement		
	Typical Cost	per year	SAP rating	Environmental Impact		
Solar photovoltaic panels, 2.5 kWp	£5,000 - £8,000	£308	A 96			





Property Reference	012					Issi	ued on Date	30/04/2	019
Assessment	Plots 22 and	1 23			Prop Type F			00/0:/2	0 _ 0
Reference					,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,				
Property	Firs Wood C	lose, Northa	ıw, Potters Baı	r, EN7 4BY					
SAP Rating			85 B	DER	15.4	15	TER	17.2	24
Environmental			88 B	% DER <ter< td=""><td></td><td></td><td>10.37</td><td></td><td></td></ter<>			10.37		
CO₂ Emissions (t/year)		1.24	DFEE	38.5	50	TFEE	50.5	55
General Requirement	s Compliance		Pass	% DFEE <tfee< td=""><td></td><td></td><td>23.83</td><td></td><td></td></tfee<>			23.83		
Assessor Details N	1rs. Nicola Bat	ista, Monito	r Energy Cons	sultancy, Tel: 0175	52830291,		Assessor ID	L706-00	001
	icola@monito	r-ec.co.uk							
Client									
SUMMARY FOR INPUT	DATA FOR: N	ew Build (As	Designed)						
Orientation		South East							
Property Tenure		Owner-occu	pied						
Transaction Type		New dwellin	ıg						
Terrain Type		Suburban							
1.0 Property Type		House, Sem	i-Detached						
2.0 Number of Storeys		2							
3.0 Date Built		2019							
4.0 Sheltered Sides		2							
5.0 Sunlight/Shade		Average or u	unknown						
6.0 Measurements									
				Heat Loss Perimete		nal Floor		erage Storey H	eight
		G	round Floor:	19.70 m 19.70 m		48.15 m ² 48.15 m ²		2.40 m 2.60 m	
			1st Storey:	19.70 111		40.13 111		2.00 111	
7.0 Living Area		19.76			m²				
8.0 Thermal Mass Param	eter	Simple calcu	ılation - Mediur	n					
Thermal Mass		250.00			kJ/m²K				
9.0 External Walls									
Description	Type								
External Wall 1		Con	struction			U-Value (W/m²K)	Gross Area (m²)	Nett Area (m²)	
Excelled Wall I	Cavity Wa	l Cavi	ity wall : plasterb	oard on dabs, AAC blo		U-Value (W/m²K) 0.13	Gross Area (m²) 80.30	Nett Area (m²) 62.78	
External Wall 2	Cavity Wal	l Cavi	ity wall : plasterbo		ock, filled	(W/m²K)	(m²)	(m²)	
	•	l Cavi cavi I Cavi	ity wall : plasterbo	ructure oard on dabs, AAC blo	ock, filled	(W/m²K) 0.13	(m²) 80.30	(m²) 62.78	
	•	l Cavi cavi I Cavi	ity wall : plasterbo ty, any outside st ity wall : plasterbo	ructure oard on dabs, AAC blo	ock, filled	(W/m²K) 0.13	(m²) 80.30	(m²) 62.78	
External Wall 2	•	l Cavi cavi l Cavi cavi	ity wall : plasterbo ty, any outside st ity wall : plasterbo	ructure oard on dabs, AAC blo	ock, filled	(W/m²K) 0.13	(m²) 80.30 18.20 U-Value	(m²) 62.78 18.20	
9.1 Party Walls Description	Cavity Wal	l Cavi cavi l Cavi cavi	ity wall : plasterbo ty, any outside st ity wall : plasterbo ty, any outside st struction	ructure oard on dabs, AAC blo ructure	ock, filled ock, filled	(W/m²K) 0.13 0.11	(m²) 80.30 18.20	(m²) 62.78 18.20	
9.1 Party Walls Description Party Wall 1	Cavity Wal	l Cavi cavi l Cavi cavi	ity wall : plasterbo ty, any outside st ity wall : plasterbo ty, any outside st struction	ructure oard on dabs, AAC blo	ock, filled ock, filled	(W/m²K) 0.13 0.11	(m²) 80.30 18.20 U-Value (W/m²K)	(m²) 62.78 18.20 Area (m²)	
9.1 Party Walls Description Party Wall 1 10.0 External Roofs	Type Solid Wall	l Cavi cavi l Cavi cavi Con	ity wall : plasterboty, any outside st ity wall : plasterboty, any outside st ty, any outside st struction	ructure oard on dabs, AAC blo ructure	ock, filled ock, filled	(W/m²K) 0.13 0.11	(m²) 80.30 18.20 U-Value (W/m²K) 0.00	(m²) 62.78 18.20 Area (m²) 45.00	
9.1 Party Walls Description Party Wall 1	Cavity Wal	l Cavi cavi l Cavi cavi Con	ity wall : plasterbo ty, any outside st ity wall : plasterbo ty, any outside st struction	ructure oard on dabs, AAC blo ructure	ock, filled ock, filled vity or cavity fi	(W/m²K) 0.13 0.11	(m²) 80.30 18.20 U-Value (W/m²K)	(m²) 62.78 18.20 Area (m²)	
9.1 Party Walls Description Party Wall 1 10.0 External Roofs	Type Solid Wall	l Cavi cavi l Cavi cavi Con	ity wall : plasterboty, any outside stity wall : plasterboty, any outside stity, any outside stity, any outside stity. In the struction are plaster both singular to the struction are plaster both singular to the struction.	ructure oard on dabs, AAC blo ructure	ock, filled ock, filled vity or cavity fi	(W/m²K) 0.13 0.11	(m²) 80.30 18.20 U-Value (W/m²K) 0.00	(m²) 62.78 18.20 Area (m²) 45.00	
9.1 Party Walls Description Party Wall 1 10.0 External Roofs Description	Type Solid Wall	l Cavi cavi l Cavi cavi Con	ity wall : plasterboty, any outside stity wall : plasterboty, any outside stity, any outside stity, any outside stity. In the struction are plaster both singular to the struction are plaster both singular to the struction.	cructure oard on dabs, AAC blo cructure ides, dense blocks, cav	ock, filled ock, filled vity or cavity fi	(W/m²K) 0.13 0.11 U-Value (W/m²K)	(m²) 80.30 18.20 U-Value (W/m²K) 0.00 Gross Area (m²)	(m²) 62.78 18.20 Area (m²) 45.00	
9.1 Party Walls Description Party Wall 1 10.0 External Roofs Description External Roof 1	Type Solid Wall	I Cavi cavi I Cavi cavi Con Den Con	ity wall : plasterboty, any outside stity wall : plasterboty, any outside stity, any outside stity, any outside stity. In the struction are plaster both singular to the struction are plaster both singular to the struction.	cructure oard on dabs, AAC blo cructure ides, dense blocks, cav	ock, filled ock, filled vity or cavity fi	(W/m²K) 0.13 0.11 U-Value (W/m²K)	(m²) 80.30 18.20 U-Value (W/m²K) 0.00 Gross Area (m²) 48.15	(m²) 62.78 18.20 Area (m²) 45.00 Nett Area (m²) 48.15	
9.1 Party Walls Description Party Wall 1 10.0 External Roofs Description External Roof 1 11.0 Heat Loss Floors	Type Solid Wall Type External Pi	I Cavi cavi I Cavi cavi Con Den Con lane Roof Plas	ity wall : plasterboty, any outside stity wall : plasterboty, any outside stity, any outside stitution	cructure oard on dabs, AAC blo cructure ides, dense blocks, cav	ock, filled ock, filled vity or cavity fi	(W/m²K) 0.13 0.11 U-Value (W/m²K)	(m²) 80.30 18.20 U-Value (W/m²K) 0.00 Gross Area (m²) 48.15	(m²) 62.78 18.20 Area (m²) 45.00 Nett Area (m²) 48.15	





12.0 Opening Type Description	Data Sour			Glazing		Glazing Gap	Argon Filled	G-val		Frame Type	Frame Factor	U Valu (W/m²l
Opening Type 1	Manufacti r	ure Solid	Door									1.40
Opening Type 2		ure Windo	ow	Double Low-E	Hard 0.15			0.7	2		0.70	1.40
13.0 Openings												
Name	Opening Type	Locatio	n	Orientation	Curtain Type	Overhang Ratio	Wide Overhang	Width (m)	Height (m)	Count	Area (m²)	Curtain Closed
Opening 1	Solid Door	[1] Exte	rnal Wall 1	South East	. , , , ,	110.010	0.0	(,	()		2.05	0.000
Opening 2	Window	[1] Exte	rnal Wall 1	South East	None	0.00					1.89	
Opening 3	Window	[1] Exte	rnal Wall 1	South East	None	0.00					2.16	
Opening 4	Window	[1] Exte	rnal Wall 1	South East	None	0.00					0.76	
Opening 5	Window	[1] Exte	rnal Wall 1	North West	None	0.00					4.00	
Opening 6	Window	[1] Exte	rnal Wall 1	North West	None	0.00					1.02	
Opening 7	Window	[1] Exte	rnal Wall 1	North West	None	0.00					4.32	
Opening 8	Window	[1] Exte	rnal Wall 1	South West	None	0.00					1.32	
14.0 Conservatory		١	None									
15.0 Draught Proof	fing	1	100				%					
16.0 Draught Lobb	У	١	No									
17.0 Thermal Bridg	ging	(Calculate Br	idges								
17.1 List of Bridges												
Source Type		ge Type				Length	Psi	Imported	ı			
Independently as			s (including o	ther steel lintels	5)	9.87	0.050	Yes				
Independently as						8.87	0.040	Yes				
Independently as		amb	/			25.00	0.020	Yes				
Independently as Independently as			or (normal) se floor within	n a duvallina		19.70 19.70	0.130	No No				
Independently as			ulation at ceil			8.20	0.060	No				
Independently as			ulation at cei			11.50	0.100	No				
Independently as		Corner (no		iiig ieveij		10.00	0.040	Yes				
Table K1 - Approv			between dw	ellings		10.00	0.060	Yes				
Independently as		-	Ground floor	_		9.00	0.040	No				
Independently as	ssessed P2 F	arty wall -		e floor within a		9.00	0.000	No				
Independently as		lling Party wall -	Roof (insulat	ion at ceiling lev	rel)	9.00	0.050	No				
Y-value		C	0.038				W/m²K					
18.0 Pressure Testi	ing		'es									
Designed AP ₅₀	3	=	5.00				m³/(h.m²) @ 50 P	а			
Property Teste	d ?	Ė					•	-				
As Built AP ₅₀		Ī					m³/(h.m²) @ 50 P	a			
19.0 Mechanical V	entilation											
Summer Overh	neating											
Windows o	pen in hot weat	her	Window	s half open								
	lation possible		No				一					
Night Venti			No				一					
Air change			2.50				=					
_			2.30									
Mechanical Ve							_					
Mechanical \	Ventilation System	n Present	No									

20.0 Fans, Open Fireplaces, Flues





Number of Chimneys Number of open flues Number of intermittent fans Number of passive vents Number of flueless gas fires	MHS 0 0	SHS	Other 0 0	Total 0 0 3 0	
21.0 Fixed Cooling System	No				
22.0 Lighting					
Internal				-	
Total number of light fittings	12				
Total number of L.E.L. fittings	12				
Percentage of L.E.L. fittings	100.00			9 %	
External					
External lights fitted	No				
23.0 Electricity Tariff	Standard				
24.0 Main Heating 1	Database				
Percentage of Heat	100				
Database Ref. No.	16842				
Fuel Type	Mains gas				
Main Heating	BGW				
SAP Code	104				
In Winter	90.2				
In Summer	87.0				
Controls	CBI Time and te	emperature zo	ne control		
PCDF Controls	0				
Delayed Start Stat	No				
Sap Code	2110				
Boiler Compensator	Vaillant Group (UK Ltd, Vaillan	it, VRT 350		
Flue Type	Balanced				
Fan Assisted Flue	Yes				
Is MHS Pumped	Pump in heated	l space			
Heat Emitter	Radiators and L	Inderfloor			
Underfloor Heating	Yes - Pipes in th	in screed			
Flow Temperature	Normal (> 45°C))			
Combi boiler type	Standard Comb	i			
Combi keep hot type	None				
25.0 Main Heating 2	None				
Community Hasting				1	
Community Heating	None HWP From mair	n heating 1]]	
28.0 Water Heating]	
Water Heating	Main Heating 1]]	
Flue Gas Heat Recovery System	No No]]	
Waste Water Heat Recovery Instantaneous System 1	INU				
Waste Water Heat Recovery Instantaneous System 2	No				





29.0 Hot Water Cylinder	None	
SAP Code	901	
Water use <= 125 litres/person/day	Yes	
Solar Panel	No	
Storage System		
Waste Water Heat Recovery	No	

Recommendations

Lower cost measures

None

Further measures to achieve even higher standards

	Turnical Cost	Typical savings	Ratings after improvement			
	Typical Cost	per year	SAP rating	Environmental Impact		
Solar water heating	£4,000 - £6,000	£31	B 86			
	Typical Cost	Typical savings	Ratings a	fter improvement		
	Typical Cost	per year	SAP rating	Environmental Impact		
Solar photovoltaic panels, 2.5 kWp	£5,000 - £8,000	£308	A 96			





Property Reference	001						Issued o	n Doto	30/04	/2010
	Plots 24 and	1.26			Duon Tu	no Dof			30/04/	/2019
Assessment Reference	Plots 24 and	1 26			Prop 1y	ре кет	2 bed sem	ı		
Property	Firs Wood C	lose North	naw, Potters Ba	r FN7 4RV						
	1 113 W 000 C	1030, 1401 (1	-				_			
SAP Rating			86 B	DER		14.80	TER		17	7.80
Environmental			89 B	% DER <ter< td=""><td></td><td></td><td>1</td><td>6.87</td><td></td><td></td></ter<>			1	6.87		
CO ₂ Emissions (t/year)			1.02	DFEE		35.90	TFEE		50	0.02
General Requirements	Compliance		Pass	% DFEE <tfee< td=""><td></td><td></td><td>2</td><td>8.23</td><td></td><td></td></tfee<>			2	8.23		
Assessor Details M	Irs. Nicola Batt	ista, Monit	tor Energy Cons	ultancy, Tel: 017	528302	91,	Asses	sor ID	L706-	0001
	cola@monito									
Client										
SUMMARY FOR INPUT	DATA FOR: N	ew Build (A	As Designed)							
Orientation		North East	<u> </u>		1					
Property Tenure		Owner-occ			ĺ					
Transaction Type		New dwell	-		ĺ					
Terrain Type		Suburban			j					
1.0 Property Type		House, Sei	mi-Detached		ĺ					
2.0 Number of Storeys		2			ĺ					
3.0 Date Built		2019			Ī					
4.0 Sheltered Sides		2			Ī					
5.0 Sunlight/Shade		Average o	r unknown]					
6.0 Measurements										
				Heat Loss Perimet	ter I	Internal F	loor Area	Ave	rage Storey	Height
			Ground Floor:	18.30 m		41.6			2.40 m	
			1st Storey:	18.30 m		41.6	0 m²		2.60 m	
7.0 Living Area		19.49			m²					
8.0 Thermal Mass Parame	eter	Simple cal	culation - Mediur	n	1					
Thermal Mass		250.00			kJ/m²k	<				
9.0 External Walls										
Description	Туре	Co	onstruction			U-Va	lue Gros	s Area	Nett Area	
						(W/n	n²K) (r	n²)	(m²)	
External Wall 1	Cavity Wal		avity wall : plasterb avity, any outside st	oard on dabs, AAC blo	ock, filled	0.1	.3 43	3.92	33.98	
External Wall 2	Cavity Wal	l Ca	avity wall : plasterb	oard on dabs, AAC blo	ock, filled	0.1	.1 47	.58	40.98	
		са	ivity, any outside st	ructure						
9.1 Party Walls										
Description	Туре	Co	onstruction					alue m²K)	Area (m²)	
Party Wall 1	Filled Cavit	y with De	ense plaster both si	des. lightweight aggr	egate blo	cks, cavity		,	42.50	
	Edge Sealir	ng ca	vity fill							
10.0 External Roofs										
Description	Туре	Co	onstruction			U-Va			Nett Area	
External Roof 1	Evternal DI	ane Roof DI	asterboard, insulate	ed at ceiling level		(W/n 0.1		n²) 60	(m²) 41.60	
External Noof 1	EXCCITION FI	c 11001 FI	aster soura, moulat	ca at coming level		0.1			11.00	
11.0 Heat Loss Floors	Turns	-	anctruction					alue	Arca	
Description	Туре	Co	onstruction					alue m²K)	Area (m²)	
Heat Loss Floor 1	Ground Flo	oor - Solid Sl	ab on ground, scree	ed over insulation			0.	12	41.60	





12.0 Opening Typ Description	es Data Source	Туре	Glazing		Glazing Gap	Argon Filled	G-val	ue	Frame Type	Frame Factor	U Value (W/m²K
Opening Type 1		Solid Door			Gup	rincu			Type	ractor	1.40
Opening Type 2	r Manufacture r	Window	Double Low-E	Hard 0.15			0.7	2		0.70	1.40
13.0 Openings											
Name	Opening Type	Location	Orientation	Curtain Type	Overhang Ratio	Wide Overhang	Width (m)	Heigh (m)	t Count	Area (m²)	Curtain Closed
Opening 1	Solid Door	[1] External Wall 1	North East							2.16	
Opening 2	Window	[1] External Wall 1	North East	None	0.00					2.16	
Opening 3		[2] External Wall 2	North East	None	0.00					2.16	
Opening 4		[2] External Wall 2	North East	None	0.00					0.76	
Opening 5	Window	[2] External Wall 2	South West	None	0.00					0.76	
Opening 6		[2] External Wall 2	South West	None	0.00					2.16	
Opening 7		[1] External Wall 1	South West	None	0.00					0.76	
Opening 8		[2] External Wall 2	South East	None	0.00					0.76	
Opening 9	Window	[1] External Wall 1	South West	None	0.00					4.10	
Opening 10	Window	[1] External Wall 1	South East	None	0.00					0.76	
4.0 Conservator	у	None									
L5.0 Draught Pro	ofing	100				%					
L6.0 Draught Lob	by	No									
.7.0 Thermal Brid	lging	Calculate B	ridges								
7.1 List of Bridge	es										
Source Type	Bridge	Туре			Length	Psi	Imported	I			
Independently		er lintels (including	other steel lintels	5)	8.93	0.050	Yes				
Independently					7.93	0.030	Yes				
Independently					26.50	0.020	Yes				
Independently		und floor (normal)			18.30	0.050	No				
Independently		rmediate floor with	_		18.30	0.000	No				
Independently		ves (insulation at ce			9.80	0.050	No				
Independently		ble (insulation at ce	eiling level)		8.50	0.050	No				
Independently		rner (normal) rty wall between dv	vollings		10.00	0.040	Yes				
Table K1 - Appr Independently		ty wall - Ground floo			10.00	0.060	Yes				
Table K1 - Defa		ty wall - Intermedia			8.50 8.50	0.040	No No				
	dwellir	ng					INO				
Independently	assessed P4 Pari	ty wall - Roof (insula	ition at ceiling lev	rel)	8.50	0.050	No				
Y-value		0.028				W/m²K					
18.0 Pressure Tes	ting	Yes									
Designed AP ₅₀)	5.00				$m^3/(h.m^2$) @ 50 P	a			
Property Test	ed ?										
As Built AP ₅₀						m³/(h.m²) @ 50 P	а			
L9.0 Mechanical	Ventilation										
Summer Over	heating										
Windows open in hot weather Windows ha			ws half open								
Cross ventilation possible Yes											
Night Ventilation No											
Air change	e rate	4.00									
_	entilation										
iviechanicai v	Circination										





20.0 Fans, Open Fireplaces, Flues				
	MHS	SHS	Other	Total
Number of Chimneys Number of open flues	0		0	0
Number of open flues Number of intermittent fans	U		U	3
Number of passive vents				0
Number of flueless gas fires				0
21.0 Fixed Cooling System	No			
22.0 Lighting				
Internal				
Total number of light fittings	12			
Total number of L.E.L. fittings	12			
Percentage of L.E.L. fittings	100.00			%
External				
External lights fitted	No			
23.0 Electricity Tariff	Standard			
24.0 Main Heating 1	Database			
Percentage of Heat	100			%
Database Ref. No.	17953			
Fuel Type	Mains gas			
Main Heating	BGW			
SAP Code	104			
In Winter	90.6			
In Summer	87.1			
Controls	CBI Time and te	emperature zoi	ne control	
PCDF Controls	0			
Delayed Start Stat	No			
Sap Code	2110			
Boiler Compensator	Vaillant Group	UK Ltd, Vaillan	t, VRT 350	
Flue Type	Balanced			
Fan Assisted Flue	Yes			
Is MHS Pumped	Pump in heated	d space		
Heat Emitter	Radiators and U	Jnderfloor		
Underfloor Heating	Yes - Pipes in th	nin screed		
Flow Temperature	Normal (> 45°C	:)		
Combi boiler type	Standard Comb	oi		
Combi keep hot type	None			
25.0 Main Heating 2	None			
Community Heating	Nicon			
Community Heating	None	n hootic = 1		_
28.0 Water Heating	HWP From mai			
Water Heating	Main Heating 1	•		
Flue Gas Heat Recovery System	Yes			
Waste Water Heat Recovery Instantaneous System 1	No			
Waste Water Heat Recovery	No			





29.0 Hot Water Cylinder	None]
28.1 Flue Gas Heat Recovery System		
SAP Code	901	
Water use <= 125 litres/person/day	Yes	
Solar Panel	No	
Storage System		•
Waste Water Heat Recovery	No	
ilistalitalieous system z		

Recommendations

Lower cost measures

None

Further measures to achieve even higher standards

ittilet illeasures to actileve even illgilet ste	andaras					
	Typical Cost	Typical savings	Ratings after improvement			
	Typical Cost	per year	SAP rating	Environmental Impact		
Solar water heating	£4,000 - £6,000	£29	B 87			
	Typical Cost	Typical savings	Ratings a	fter improvement		
	Typical Cost	per year	SAP rating	Environmental Impact		
Solar photovoltaic panels, 2.5 kWp	£5,000 - £8,000	£308	A 97			





Property Reference 0	25					Iss	ued on Date	30/04/2019
Assessment	lot 25				Prop Type Re			
Reference								
Property	irs Wood Cl	ose, Nort	haw, Potters Bar,	EN7 4BY				
SAP Rating			86 B	DER	13.94	ļ	TER	16.60
Environmental			90 B	% DER <ter< td=""><td></td><td></td><td>16.05</td><td></td></ter<>			16.05	
CO₂ Emissions (t/year)			0.95	DFEE	31.94		TFEE	43.32
General Requirements Co	ompliance		Pass	% DFEE <tfee< td=""><td></td><td></td><td>26.26</td><td></td></tfee<>			26.26	
Assessor Details Mrs.	Nicola Batti	ista, Mon	itor Energy Consu	ıltancy, Tel: 017!	52830291,		Assessor ID	L706-0001
	a@monitor				,			
Client								
SUMMARY FOR INPUT DA	TA FOR: Ne	ew Build (As Designed)					
Orientation		South We	est					
Property Tenure		Owner-od	ccupied					
Transaction Type		New dwe						
Terrain Type		Suburban						
1.0 Property Type			lid-Terrace					
2.0 Number of Storeys		2						
3.0 Date Built		2019						
4.0 Sheltered Sides		2	or unknown					
5.0 Sunlight/Shade		Average	or unknown					
6.0 Measurements				leat Loss Perimet	or Intern	al Floor	· Area Av	erage Storey Height
			Ground Floor:	9.80 m		1.60 m ²		2.40 m
			1st Storey:	9.80 m	4	1.60 m²	2	2.60 m
7.0 Living Area		19.49			m²			
8.0 Thermal Mass Parameter		Simple ca	lculation - Medium					
Thermal Mass		250.00			kJ/m²K			
9.0 External Walls								
Description	Туре	C	Construction			-Value	Gross Area	Nett Area
External Wall 1	Cavity Wall		Cavity wall : plasterbo	ard on dahs AAC blo	•	V/m²K) 0.13	(m²) 23.52	(m²) 14.34
	cavity wan	С	avity, any outside str	ucture		0.13	23.32	14.54
External Wall 2	Cavity Wall		Cavity wall : plasterbo cavity, any outside str		ock, filled	0.11	25.48	19.64
0.1 Party Walls								
9.1 Party Walls Description	Туре	c	Construction				U-Value	Area
							(W/m²K)	(m²)
Party Wall 1	Filled Cavity Edge Sealin		Dense plaster both sid cavity fill	es. lightweight aggre	egate blocks, cav	ity or	0.00	85.00
10.0 External Roofs								
Description	Туре	c	Construction		ι	I-Value	Gross Area	Nett Area
5	5	5 (5			(1	V/m²K)	(m²)	(m²)
External Roof 1	External Pla	ane Root P	Plasterboard, insulate	a at ceiling level		0.11	41.60	41.60
11.0 Heat Loss Floors	.	_						A
Description	Туре	C	Construction				U-Value (W/m²K)	Area (m²)
Heat Loss Floor 1	Ground Flo	or - Solid S	slab on ground, screed	d over insulation			0.11	41.60





12.0 Opening Type Description	es Data Source	Туре	Glazing		Glazing Gap	Argon Filled	G-val	ue	Frame Type	Frame Factor	U Value (W/m²K
Opening Type 1		Solid Door									1.40
Opening Type 2 r Manufacture Win r		e Window	dow Double Low-E Hard 0.15				0.7	2		0.70	1.40
13.0 Openings	Ononing Type	Location	Orientetion	Contain	Overhana	\A/: d o	VA/: el te la	Heigh	t Count	Aron	Cuntain
Name	Opening Type	Location	Orientation	Curtain Type	Overhang Ratio	Wide Overhang	Width (m)	Heigh (m)	t Count	Area (m²)	Curtain Closed
Opening 1	Solid Door	[1] External Wall 1	North East					. ,		2.16	
Opening 2	Window	[1] External Wall 1	North East	None	0.00					2.16	
Opening 3	Window	[2] External Wall 2	North East	None	0.00					2.16	
Opening 4	Window	[2] External Wall 2	North East	None	0.00					0.76	
Opening 5	Window	[1] External Wall 1	South West	None	0.00					4.10	
Opening 6	Window	[1] External Wall 1	South West	None	0.00					0.76	
Opening 7 Opening 8	Window Window	[2] External Wall 2 [2] External Wall 2	South West South West	None None	0.00					0.76 2.16	
4.0 Conservatory		None			0.00						
.5.0 Draught Proo		100				%					
•	•					/0					
.6.0 Draught Lobb	У	No									
7.0 Thermal Brid	ging	Calculate B	ridges								
7.1 List of Bridge											
Source Type	Bridge				Length		Imported	I			
Independently a		er lintels (including	other steel lintels	5)	8.93	0.050	Yes				
Independently a		.la			7.93	0.030	Yes				
Independently a Independently a		und floor (normal)			26.50 9.80	0.020 0.050	Yes No				
Independently a		ermediate floor with	nin a dwolling		9.80	0.000	No				
Independently a		ves (insulation at co			9.80	0.050	No				
Table K1 - Appro		rty wall between d			10.00	0.060	Yes				
Independently a		ty wall - Ground flo			17.00	0.040	No				
Table K1 - Defau	lt P2 Par	ty wall - Intermedia			17.00	0.000	No				
Independently a	dwellir ssessed P4 Par	ty wall - Roof (insula	ation at ceiling lev	rel)	17.00	0.050	No				
Y-value		0.033				W/m²K					
.8.0 Pressure Test	ing	Yes									
Designed AP₅o		5.00				m³/(h.m²)	@ 50 P	а			
Property Teste	d?					,					
As Built AP ₅₀						m ³ /(h.m ²)	@ 50 P	а			
L9.0 Mechanical V	entilation										
Summer Overl	neating										
Windows o	pen in hot weathe	er Windo	ws half open								
Cross ventilation possible Yes											
Night Ventilation No						$\bar{\Box}$					
Air change rate 4.00						=					
Mechanical Ve											
	Ventilation System P	resent No									
20.0 Fans, Open Fi											
ans, Open 11	opiaces, i raes	MHS	SHS	(Other	Total					
Number of Chi	mneys	0			0	0					





Number of intermittent fans Number of passive vents		3 0
Number of flueless gas fires		0
21.0 Fixed Cooling System	No	
22.0 Lighting		
Internal		_
Total number of light fittings	12	
Total number of L.E.L. fittings	12	
Percentage of L.E.L. fittings	100.00	%
External		
External lights fitted	No	
23.0 Electricity Tariff	Standard	
24.0 Main Heating 1	Database	
Percentage of Heat	100	%
Database Ref. No.	17953	
Fuel Type	Mains gas	
Main Heating	BGW	
SAP Code	104	
In Winter	90.6	
In Summer	87.1	
Controls	CBI Time and temperature zone control	
PCDF Controls	0	
Delayed Start Stat	No	
Sap Code	2110	
Boiler Compensator	Vaillant Group UK Ltd, Vaillant, VRT 350	
Flue Type	Balanced	
Fan Assisted Flue	Yes	
Is MHS Pumped	Pump in heated space	
Heat Emitter	Radiators and Underfloor	
Underfloor Heating	Yes - Pipes in thin screed	
Flow Temperature	Normal (> 45°C)	
Combi boiler type	Standard Combi	
Combi keep hot type	None	
25.0 Main Heating 2	None	
Community Heating	None	
28.0 Water Heating	HWP From main heating 1	Ī
Water Heating	Main Heating 1	Ī
Flue Gas Heat Recovery System	Yes	\exists
• •		



Waste Water Heat Recovery

Waste Water Heat Recovery Instantaneous System 2 Waste Water Heat Recovery

Instantaneous System 1

Storage System

No

No

No



Solar Panel	No	
Water use <= 125 litres/person/day	Yes	
SAP Code	901	
28.1 Flue Gas Heat Recovery System		
29.0 Hot Water Cylinder	None	

Recommendations

Lower cost measures

None

Further measures to achieve even higher standards

	Tymical Cost	Typical savings	Ratings a	fter improvement
	Typical Cost	per year	SAP rating	Environmental Impact
Solar water heating	£4,000 - £6,000	£29	B 87	
	Typical Cost	Typical savings	Ratings a	fter improvement
	Typical Cost	per year	SAP rating	Environmental Impact
Solar photovoltaic panels, 2.5 kWp	£5,000 - £8,000	£308	A 98	

