green tiger
SUSTAINABILITY

Mockbeggars Farm
Uckfield, Wealden District

Energy Statement

Prepared for:

Obsidian Strategic Asset Management Limited

Prepared by:

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Issue Status

Prepared by:	Ross Standaloft
Company Name:	Green Tiger Sustainability
Signature:	**RS**

Revision Number	Issue Date:	Issue by:
Revision 2	14.01.2022	Ross Standaloft

DISCLAIMER

This report is made on behalf of Green Tiger Sustainability. By receiving the report and acting on it, the client - or any third party relying on it - accepts that no individual is personally liable in contract, tort or breach of statutory duty (including negligence).

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EXECUTIVE SUMMARY

INTRODUCTION AND TARGETS	Green Tiger Sustainability has been appointed, as energy assessors and sustainability consultants, to determine how the scheme at 'Land at Mockbeggars farm, Uckbridge' can meet Wealden District Core Strategy Planning Policy WCS13 & WCS14 and wider sustainability requirements i.e. Carbon emissions beyond Part L energy requirements and Part G water use limited to 110 litres per person per day. It is noted that these targets are in a site-wide basis and replace the Code for Sustainable Homes Level 4 requirement in Wealden and nationwide, where no replacement policy has been formed. This report is based on analysis of proposed drawings and subsequent email / telephone exchanges with the design team.
DEVELOPMENT SUMMARY	Planning Application for the construction of 60 residential units with associated car parking and landscaping. The development will be of traditional design and in keeping with the local area.
RESULT SUMMARY	This report outlines the proposed method to go beyond CO2 reductions required for Part L regulations and details the performance specification for water use to meet the 110 litres per person per day standard, beyond Part G. In addition to wider sustainability considerations of policy WCS13 & WCS14. On initial designs and specification, the development surpasses Part L building regulations, going an estimated **20%** beyond the minimum requirement across the site. Example SAP models have been done based on best practice building fabric and Gas or Air Source for heating and hot water. These can be found at the back of this report. The development will also exceeds the water use requirement of Part G. The specification detailed in this report outlines water use of **103.2 litres per person per day**.

ENERGY

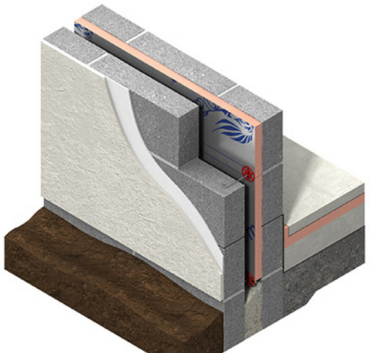
CO2 Emissions	
Aim	To limit CO2 emissions arising from the operation of a dwelling and its services in line with Part L building regulations and in this case, beyond.
Development comments	Inline with planning policy, the design team has targeted to reduce CO2 emissions beyond Part L1a minimum requirements. The energy strategy is initially focused on implementing fabric efficient, passive design measures to minimise energy demand for heating and utilise efficient heating to reduce emissions further. For 20 units, energy and Hot Water will be supplied via a 8.5KW or 11KW Air Source Heat Pump, with underfloor heating to supply clean energy to the site and significantly lower carbon emissions across the site. For 40 units on site, the heating and direct hot water will be supplied via a highly efficient condensing combi gas boiler, with underfloor heating distribution and future proofing for potential ASHP connection at a later stage. The highly efficient building fabric will be in line with the parameters set out below:

Element	**U-Value (W/m^2K)**
Walls	0.18
Floor	0.12
Roof	0.15
Windows / Doors	1.3 (average) / 1.0

In addition, the design team will pay close attention to airtightness and thermal bridging in the fabric. Air permeability will not be more than 4 $m^3/m^2/hr$ at 50 Pa and the average Y-value for thermal bridging across junctions will be no more than 0.06 (i.e. in line with robust detail standards as a minimum). Ventilation will meet Part F standards.

Initial estimates show an average **20%** improvement of the Dwelling Emission Rate (DER) over the Target Emission Rate (TER) in SAP. Which goes beyond the target requirement for the project (Part L). Example SAP calculations can be viewed in the appendix.

PRODUCTS

Energy Efficiency Products	
Introduction	The following products have been assumed in the energy modeling at this stage. They are considered the some of the best products on the current market. These products are subject to a full feasibility check by the design team. Products can be swapped – please contact Green Tiger to work any different products into the energy modeling.
Insulation	Kingspan Kooltherm K range offers high spec rigid insulation to meet the u-values stated in the energy modeling. Note that other products such as Knauf or Celotex can achieve similar results. http://www.kingspaninsulation.co.uk/Products/kooltherm.aspx 
Air Tightness products	 Pro-clima Intello-plus products ensure key punctures and junctions are sealed to achieve low airtightness. http://www.kingspaninsulation.co.uk/Products/kooltherm.aspx

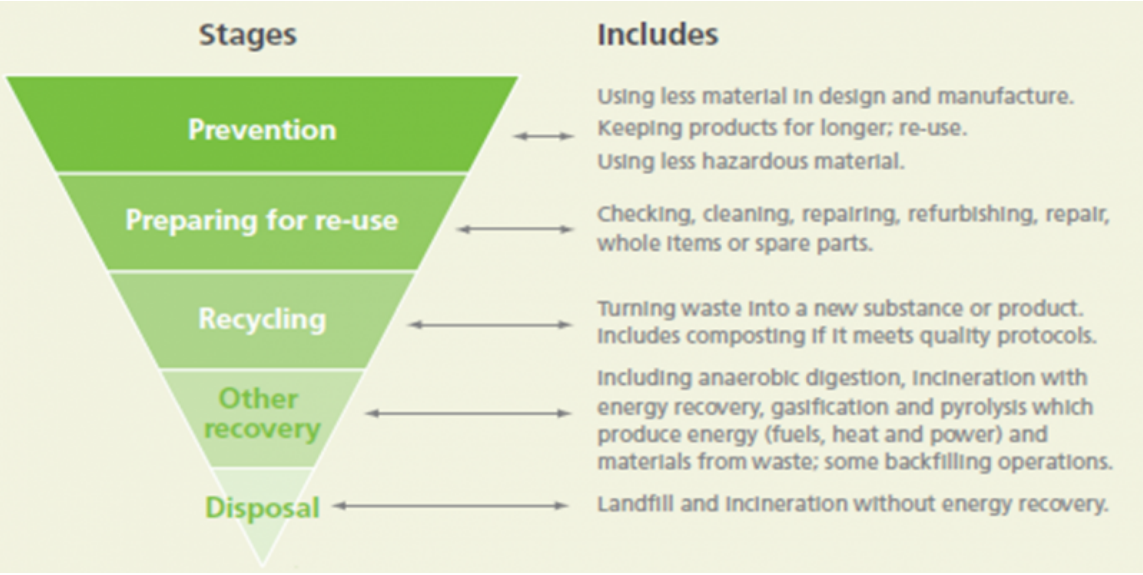
Air Source Heat Pump	An Air Source Heat Pump takes energy from the ambient air and uses a compressor to generate cleaner heat energy and hot water for the scheme, lowering CO2 emissions.  A suggested specification would consist of a 8.5 or 11.2KW Mitsubishi Ecodan ASHP on 20 plots. They work most efficiently with an underfloor heating system an this should be considered. https://les.mitsubishielectric.co.uk/products/heating/domestic/outdoor

WATER

Water Consumption	
Introduction	To reduce the consumption of potable water in the home from all sources, through the use of water efficient fittings, appliances and water recycling systems. It is good practice for all new build dwellings to meet an equivalent Code level 4 standard for dwellings, which is a maximum 110 litres per person per day or better. This surpasses the baseline for Part G water, which is 125 litres per person per day.
Development comments	Mains water usage shall be significantly reduced through water efficient products in line with the mandatory requirements. A target of 110 litres/person/day will be met to reach required target. An indicative specification for the development is: • Showers of 9 litres/minute (flow restrictors) • Bath sizes to be 180 litres to overflow • Washbasin taps to be flow limited to 3.5 litres/minute • Kitchen taps to flow limited to 4 litres/minute • Dual Flush WCs at 4.5/2 litre • Dishwasher at 0.9 litres per place setting max • Washing machine at 9 litres per kg The above specification will give a usage of below 103.2 Litres per person per day litres/person/day, which surpasses the requirements of Part G.

WASTE & RECYCLING

Waste on Site	
Introduction	Wealden planning policy states that construction waste should be minimized. Therefore the site aims to practice the Waste Hierarchy (pictured below) within both the design and construction of the development. A site waste management plan will be implemented to ensure minimal waste on site.
Prevention / Reduction	• The project will use standard sizes and quantities of materials, and plan ahead to reduce off cuts. • Over-ordering will be kept to a minimum through detailed quantity surveying as part of the SWMP requirements. • Deliveries will be arranged to match work stages, to avoid materials being stored on site longer than necessary. • All storage areas on site will be safe, secure and weatherproof. • A site induction will aim to brief the construction team on minimising rework from errors and poor workmanship.
Reuse of materials	There is a some demolition taking place on site and materials will be reused or aggregate where possible. The site team will fix temporary materials (e.g. timber hoarding) so they can be dismantled and reused. Also items such as pallets will be stored for reuse or returned to the supplier.
Recycling	The site SWMP will target to recycle at least 90% of all waste not reused on site. An off site collection company will§ be employed to ensure waste is efficiently sorted for recycling and report weekly.



FURTHER SUSTAINBILITY

Key Issues	
Flood Risk	The site is in a low risk, flood zone 1 area, with no further requirements to implement flood control, beyond standard regulations.  These relate to managing localized flooding from hard standing areas, including SuDS, defenses and mitigating flood risk. There is no site-specific warnings.
Sustainable Materials	The dwellings will be built from quality, long lasting materials that have the correct environmental certification as follows: - ISO 14001 - All brick, steel and glazing - BES 6001 – All foundations and large concrete areas - FSC / PEFC – All timber, site and fabric Best practice build ups of insulation and insulated plasterboard will increase the strength and resilience of the property to external affects. Insulation and airtightness products can be found on page 6 of this report.
Biodiversity	Where any existing features of ecological value on or around the development site are potentially affected by the works, they will be maintained and adequately protected during site clearance, preparation and construction works. The following has been recommended to enhance site ecology by the project Ecology consultant: **Habitat Creation** New Hedgerows. New native species-rich hedgerow planting at the north-eastern site boundaries would provide a net gain in hedgerow habitat on-site and provide enhanced connectivity through the site and with off-site habitats. **New Planting** It is proposed that, where practicable, new planting within the site be comprised of native species of local provenance, including trees and shrubs appropriate to the local area. Suitable species for

	inclusion within the planting could include native trees such as Oak, Birch Betula pendula and Field Maple, whilst native shrub species of particular benefit would likely include fruit and nut bearing species which would provide additional food for wildlife, such as Blackthorn, Hawthorn, Crab Apple Malus sylvestris, Hazel Corylus, avellana and Elder. Where non-native species are proposed, these should include species of value to wildlife, such as varieties listed on the RHS' 'Plants for Pollinators' database, providing a nectar source for bees and other pollinating insects. **Grassland Enhancement** It is proposed that the grassland within the ancient woodland buffer be enhanced through the introduction of a sensitive meadow management regime. With the removal of sheep grazing, over time this should enhance the botanical diversity and increase species-richness of the grassland. **Wetland Features** A number of SuDS basins and swales are included under the proposals. Through seeding with a native wetland mix and appropriate management this would provide opportunities for a range of wildlife.

APPENDIX:

- **Site plan**
- **Example Energy (SAP) calculations**



Proposed Coloured Sketch Layout Plan
Mockbeggars Farm, Uckfield

20179 / C101

Scale 1:500 @ A1 November 2021

SUMMARY FOR INPUT DATA
Calculation Type: New Build (As Designed)

Design SAP
elmhurst energy

Property Reference	Mockbeggars Farm	**Issued on Date**	02/12/2021
Assessment Reference	Example Unit ASHP	**Prop Type Ref**	
Property	Mockbeggars Farm		

SAP Rating	86 B	**DER**	15.10	**TER**	25.79
Environmental	88 B	**% DER<TER**	41.45		
CO_2 Emissions (t/year)	1.13	**DFEE**	50.94	**TFEE**	53.21
General Requirements Compliance	Pass	**% DFEE<TFEE**	4.25		

Assessor Details	Mr. Nicky Bowen, Domestic Energy Solutions, Tel: 01455883250, nickybowen@sky.com	**Assessor ID**	D719-0001
Client			

SUMMARY FOR INPUT DATA FOR: New Build (As Designed)

Orientation	East
Property Tenure	Owner-occupied
Transaction Type	New dwelling
Terrain Type	Urban
1.0 Property Type	House, Semi-Detached
2.0 Number of Storeys	2
3.0 Date Built	2020
4.0 Sheltered Sides	2
5.0 Sunlight/Shade	Average or unknown

6.0 Measurements

	Heat Loss Perimeter	Internal Floor Area	Average Storey Height
Ground Floor:	19.20 m	45.10 m²	2.35 m
1st Storey:	19.20 m	45.11 m²	2.65 m

7.0 Living Area	18.30	m²
8.0 Thermal Mass Parameter	Simple calculation - Medium	
Thermal Mass	250.00	kJ/m²K

9.0 External Walls

Description	Type	U-Value (W/m²K)	Gross Area (m²)	Nett Area (m²)
External Wall 1	Cavity Wall	0.18	96.00	69.67

9.1 Party Walls

Description	Type	Construction	U-Value (W/m²K)	Area (m²)
Party Wall 1	Filled Cavity with Edge Sealing		0.00	40.50

10.0 External Roofs

Description	Type	U-Value (W/m²K)	Gross Area (m²)	Nett Area (m²)
External Roof	External Plane Roof	0.15	45.11	45.11

11.0 Heat Loss Floors

Description	Type	Construction	U-Value (W/m²K)	Area (m²)
Heat Loss Floor	Ground Floor - Solid		0.12	46.38

12.0 Opening Types

SUMMARY FOR INPUT DATA
Calculation Type: New Build (As Designed)

Design SAP
elmhurst energy

Property Reference	Mockbeggars Farm	**Issued on Date**	02/12/2021
Assessment Reference	Example Unit ASHP	**Prop Type Ref**	
Property	Mockbeggars Farm		

SAP Rating	86 B	**DER**	15.10	**TER**	25.79
Environmental	88 B	**% DER<TER**	41.45		
CO_2 Emissions (t/year)	1.13	**DFEE**	50.94	**TFEE**	53.21
General Requirements Compliance	Pass	**% DFEE<TFEE**	4.25		

Assessor Details	Mr. Nicky Bowen, Domestic Energy Solutions, Tel: 01455883250, nickybowen@sky.com	**Assessor ID**	D719-0001
Client			

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1st Storey:	19.20 m	45.11 m²	2.65 m

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Thermal Mass	250.00	kJ/m²K

9.0 External Walls

Description	Type	U-Value (W/m²K)	Gross Area (m²)	Nett Area (m²)
External Wall 1	Cavity Wall	0.18	96.00	69.67

9.1 Party Walls

Description	Type	Construction	U-Value (W/m²K)	Area (m²)
Party Wall 1	Filled Cavity with Edge Sealing		0.00	40.50

10.0 External Roofs

Description	Type	U-Value (W/m²K)	Gross Area (m²)	Nett Area (m²)
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11.0 Heat Loss Floors

Description	Type	Construction	U-Value (W/m²K)	Area (m²)
Heat Loss Floor	Ground Floor - Solid		0.12	46.38

12.0 Opening Types

SUMMARY FOR INPUT DATA
Calculation Type: New Build (As Designed)

Design SAP
elmhurst energy

Description	Data Source	Type	Glazing	Glazing Gap	Argon Filled	G-value	Frame Type	Frame Factor	U Value (W/m²K)
Main Door	Manufacturer	Solid Door							1.00
New Windows	Manufacturer	Window	Double Low-E Soft 0.05			0.63		0.70	1.30
G Value windows	Manufacturer	Window	Double Low-E Soft 0.05			0.60		0.70	1.30

13.0 Openings

Name	Opening Type	Location	Orientation	Curtain Type	Overhang Ratio	Wide Overhang	Width (m)	Height (m)	Count	Area (m²)	Curtain Closed
Front door	Solid Door	[1] External Wall 1	East							2.15	
Front elevation	Window	[1] External Wall 1	East	None	0.00					10.34	
Rear elevation	Window	[1] External Wall 1	West	None	0.00					2.53	
Side elevation	Window	[1] External Wall 1	South	None	0.00					4.61	
Side ele	Window	[1] External Wall 1	North	None	0.00					6.70	

14.0 Conservatory	None	
15.0 Draught Proofing	100	%
16.0 Draught Lobby	No	
17.0 Thermal Bridging	Calculate Bridges	

17.1 List of Bridges

Source Type	Bridge Type	Length	Psi	Imported
Table K1 - Approved	E2 Other lintels (including other steel lintels)	17.98	0.300	Yes
Table K1 - Approved	E3 Sill	16.96	0.040	Yes
Table K1 - Approved	E4 Jamb	42.90	0.050	Yes
Table K1 - Approved	E5 Ground floor (normal)	19.20	0.160	Yes
Table K1 - Approved	E6 Intermediate floor within a dwelling	19.20	0.070	Yes
Table K1 - Approved	E10 Eaves (insulation at ceiling level)	8.10	0.060	No
Table K1 - Approved	E12 Gable (insulation at ceiling level)	11.00	0.240	No
Table K1 - Approved	E16 Corner (normal)	10.00	0.090	Yes
Table K1 - Approved	E18 Party wall between dwellings	10.00	0.060	Yes
Table K1 - Default	P1 Party wall - Ground floor	8.10	0.160	No
Table K1 - Default	P2 Party wall - Intermediate floor within a dwelling	8.10	0.000	No
Table K1 - Default	P4 Party wall - Roof (insulation at ceiling level)	8.10	0.240	No

Y-value	0.109	W/m²K
18.0 Pressure Testing	Yes	
Designed AP_{50}	4.00	m³/(h.m²) @ 50 Pa
Property Tested ?		
As Built AP_{50}		m³/(h.m²) @ 50 Pa

19.0 Mechanical Ventilation

Summer Overheating

Windows open in hot weather	Windows fully open
Cross ventilation possible	Yes
Night Ventilation	Yes
Air change rate	8.00

Mechanical Ventilation

Mechanical Ventilation System Present	No

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		4
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	16	
Total number of L.E.L. fittings	16	
Percentage of L.E.L. fittings	100.00	%
External		
External lights fitted	No	
23.0 Electricity Tariff	Standard	
24.0 Main Heating 1	Database	
Description	boiler	
Percentage of Heat	100	%
Database Ref. No.	104650	
Fuel Type	Electricity	
Main Heating	PET	
SAP Code	224	
In Winter	276.9	
In Summer	293.5	
Controls	CHD Time and temperature zone control	
PCDF Controls	0	
Sap Code	2207	
Is MHS Pumped	Pump in heated space	
Heat Emitter	Radiators	
Flow Temperature	<= 35°C	
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	
Immersion Only Heating Hot Water	No	
29.0 Hot Water Cylinder	Hot Water Cylinder	
Cylinder Stat	Yes	

Cylinder In Heated Space	Yes	
Independent Time Control	Yes	
Insulation Type	Foam	
Insulation Thickness	150 mm	
Cylinder Volume	210.00	L
Pipes insulation	Fully insulated primary pipework	

31.0 Thermal Store None

Recommendations

Lower cost measures

None

Further measures to achieve even higher standards

	Typical Cost	Typical savings per year	Ratings after improvement SAP rating	Environmental Impact
Solar water heating	£4,000 - £6,000	£55	B 88	
	Typical Cost	**Typical savings per year**	**Ratings after improvement SAP rating**	**Environmental Impact**
Solar photovoltaic panels, 2.5 kWp	£3,500 - £5,500	£349	A 98	

SUMMARY FOR INPUT DATA
Calculation Type: New Build (As Designed)

Design SAP
elmhurst energy

Property Reference	Mockbeggars Farm	**Issued on Date**	02/12/2021
Assessment Reference	Example unit GAS	**Prop Type Ref**	
Property	Mockbeggars Farm		

SAP Rating	85 B	**DER**	16.37	**TER**	16.57
Environmental	87 B	**% DER<TER**	1.21		
CO_2 Emissions (t/year)	1.19	**DFEE**	42.67	**TFEE**	44.44
General Requirements Compliance	Pass	**% DFEE<TFEE**	3.97		

Assessor Details	Mr. Nicky Bowen, Domestic Energy Solutions, Tel: 01455883250, nickybowen@sky.com	**Assessor ID**	D719-0001
Client			

SUMMARY FOR INPUT DATA FOR: New Build (As Designed)

Orientation	North East
Property Tenure	Owner-occupied
Transaction Type	New dwelling
Terrain Type	Urban
1.0 Property Type	House, Mid-Terrace
2.0 Number of Storeys	2
3.0 Date Built	2020
4.0 Sheltered Sides	2
5.0 Sunlight/Shade	Average or unknown

6.0 Measurements

	Heat Loss Perimeter	Internal Floor Area	Average Storey Height
Ground Floor:	11.00 m	45.37 m²	2.35 m
1st Storey:	11.00 m	45.37 m²	2.65 m

7.0 Living Area	36.50	m²
8.0 Thermal Mass Parameter	Simple calculation - Medium	
Thermal Mass	250.00	kJ/m²K

9.0 External Walls

Description	Type	U-Value (W/m²K)	Gross Area (m²)	Nett Area (m²)
External Wall 1	Cavity Wall	0.18	55.00	40.67

9.1 Party Walls

Description	Type	Construction	U-Value (W/m²K)	Area (m²)
Party Wall	Filled Cavity with Edge Sealing		0.00	81.00

10.0 External Roofs

Description	Type	U-Value (W/m²K)	Gross Area (m²)	Nett Area (m²)
External Roof	External Plane Roof	0.15	45.37	45.37

11.0 Heat Loss Floors

Description	Type	Construction	U-Value (W/m²K)	Area (m²)
Heat Loss Floor	Ground Floor - Solid		0.12	45.37

12.0 Opening Types

SUMMARY FOR INPUT DATA
Calculation Type: New Build (As Designed)

Design SAP
elmhurst energy

Description	Data Source	Type	Glazing	Glazing Gap	Argon Filled	G-value	Frame Type	Frame Factor	U Value (W/m²K)
Main Door	Manufacturer	Solid Door							1.00
New Windows	Manufacturer	Window	Double Low-E Soft 0.05			0.63		0.70	1.30
G value Windows	Manufacturer	Window	Double Low-E Soft 0.05			0.60		0.70	1.30

13.0 Openings

Name	Opening Type	Location	Orientation	Curtain Type	Overhang Ratio	Wide Overhang	Width (m)	Height (m)	Count	Area (m²)	Curtain Closed
Front door	Solid Door	[1] External Wall 1	North East							2.15	
Front elevation	Window	[1] External Wall 1	North East	None	0.00					5.20	
Rear elevation	Window	[1] External Wall 1	South West	None	0.00					6.98	

14.0 Conservatory	None	
15.0 Draught Proofing	100	%
16.0 Draught Lobby	No	

17.0 Thermal Bridging	Calculate Bridges	

17.1 List of Bridges

Source Type	Bridge Type	Length	Psi	Imported
Table K1 - Approved	E2 Other lintels (including other steel lintels)	9.74	0.300	Yes
Table K1 - Approved	E3 Sill	8.72	0.040	Yes
Table K1 - Approved	E4 Jamb	22.80	0.050	Yes
Table K1 - Approved	E5 Ground floor (normal)	11.00	0.160	Yes
Table K1 - Approved	E6 Intermediate floor within a dwelling	11.00	0.070	Yes
Table K1 - Approved	E10 Eaves (insulation at ceiling level)	11.00	0.060	No
Table K1 - Approved	E18 Party wall between dwellings	20.00	0.060	Yes
Table K1 - Default	P1 Party wall - Ground floor	16.20	0.160	No
Table K1 - Default	P2 Party wall - Intermediate floor within a dwelling	16.20	0.000	No
Table K1 - Default	P4 Party wall - Roof (insulation at ceiling level)	16.20	0.240	No

Y-value	0.105	W/m²K

18.0 Pressure Testing	Yes	
Designed AP_{50}	5.00	m³/(h.m²) @ 50 Pa
Property Tested ?		
As Built AP_{50}		m³/(h.m²) @ 50 Pa

19.0 Mechanical Ventilation

Summer Overheating

Windows open in hot weather	Windows fully open
Cross ventilation possible	Yes
Night Ventilation	Yes
Air change rate	8.00

Mechanical Ventilation

Mechanical Ventilation System Present	No

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				2
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	13	
Total number of L.E.L. fittings	13	
Percentage of L.E.L. fittings	100.00	%
External		
External lights fitted	No	
23.0 Electricity Tariff	Standard	
24.0 Main Heating 1	Database	
Description	boiler	
Percentage of Heat	100	%
Database Ref. No.	17929	
Fuel Type	Mains gas	
Main Heating	BGW	
SAP Code	104	
In Winter	90.5	
In Summer	87.3	
Controls	CBI Time and temperature zone control	
PCDF Controls	0	
Delayed Start Stat	No	
Sap Code	2110	
Flue Type	Balanced	
Fan Assisted Flue	Yes	
Is MHS Pumped	Pump in heated space	
Heat Emitter	Radiators	
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	

SUMMARY FOR INPUT DATA
Calculation Type: New Build (As Designed)

Design SAP
elmhurst energy

Recommendations

Lower cost measures

None

Further measures to achieve even higher standards

	Typical Cost	Typical savings per year	Ratings after improvement SAP rating	Environmental Impact
Solar water heating	£4,000 - £6,000	£27	B 86	
	Typical Cost	**Typical savings per year**	**Ratings after improvement SAP rating**	**Environmental Impact**
Solar photovoltaic panels, 2.5 kWp	£3,500 - £5,500	£349	A 96	