



SAP Report Submission for Building Regulations Compliance

Client: Vivid Design Studio

Project: Plot 1, 15-27, Horndean Road
Emsworth, Hampshire

Contact: Mark Rogers
Surecalc Limited
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Report Issue Date: 20/03/2021

EXCELLENCE
IN ENERGY
ASSESSMENT

CODE FOR SUSTAINABLE HOMES

Calculation Type: New Build (As Designed)



Property Reference	000039	Issued on Date	20/03/2021
Assessment Reference	001	Prop Type Ref	New Dwelling
Property	Plot 1, 15-27, Horndean Road, Emsworth, Hampshire		

SAP Rating	87 B	DER	14.05	TER	18.10
Environmental	89 B	% DER<TER	22.37		
CO ₂ Emissions (t/year)	1.02	DFEE	51.06	TFEE	57.52
General Requirements Compliance	Pass	% DFEE<TFEE	11.23		

Assessor Details	Mr. Mark Rogers, Surecalc Limited, Tel: 01243572695, mark@surecalc.co.uk	Assessor ID	A320-0001
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Client	Vivid Design Studio, Vivid Design Studio
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ENE 1 - Dwelling Emission Rate calculation

Total floor area	101.6	m ²	
DER	14.05	kgCO ₂ /yr/m ²	
TER	18.10	kgCO ₂ /yr/m ²	
CO ₂ emissions offset from additional allowable electricity generation	0.00	kgCO ₂ /yr/m ²	(ZC7)
Residual CO ₂ emissions offset from biofuel CHP	0.00	kgCO ₂ /yr/m ²	(ZC5)
Total CO ₂ emissions offset from SAP Section 16 allowances	0.00	kgCO ₂ /yr/m ²	
DER accounting for SAP Section 16 allowances	14.05	kgCO ₂ /yr/m ²	
Reduction DER/TER	22.37	%	
CfSH ENE1 credits achieved	3.2		
CfSH ENE1 level achieved	4		

ENE 2 – Fabric Energy Efficiency calculation

Dwelling type	House, Detached
Fabric energy efficiency (F.E.E.)	51.06 kWh/m ² /yr
CfSH ENE2 credits achieved	5.3
CfSH ENE1 and 2 overall level achieved	4

ENE 7 – Low and Zero Carbon Technologies calculation

Standard case CO₂ emissions

Total floor area	101.6	m ²	
DER	19.15	kgCO ₂ /yr/m ²	
CO ₂ emissions from electrical appliances	15.10	kgCO ₂ /yr/m ²	(ZC2)
CO ₂ emissions from cooking	1.82	kgCO ₂ /yr/m ²	(ZC3)
Standard case total CO ₂ emissions	36.07	kgCO ₂ /yr/m ²	(ZC4)
Net Standard case CO ₂ emissions	36.07	kgCO ₂ /yr/m ²	(ZC8)

Actual case CO₂ emissions

DER	15.46	kgCO ₂ /yr/m ²	
CO ₂ emissions from electrical appliances	15.10	kgCO ₂ /yr/m ²	(ZC2)
CO ₂ emissions from cooking	1.82	kgCO ₂ /yr/m ²	(ZC3)
Actual case total CO ₂ emissions	32.38	kgCO ₂ /yr/m ²	(ZC4)
CO ₂ emissions from Biomass	0.00	kgCO ₂ /yr/m ²	(ZC5)
CO ₂ reduction from additional allowable electricity generation	0.00	kgCO ₂ /yr/m ²	(ZC7)
Net Actual case CO ₂ emissions	32.38	kgCO ₂ /yr/m ²	(ZC8)
Improvement in net actual/net standard case CO ₂ emissions	10	%	

ENE7 credits achieved

1

PREDICTED ENERGY ASSESSMENT



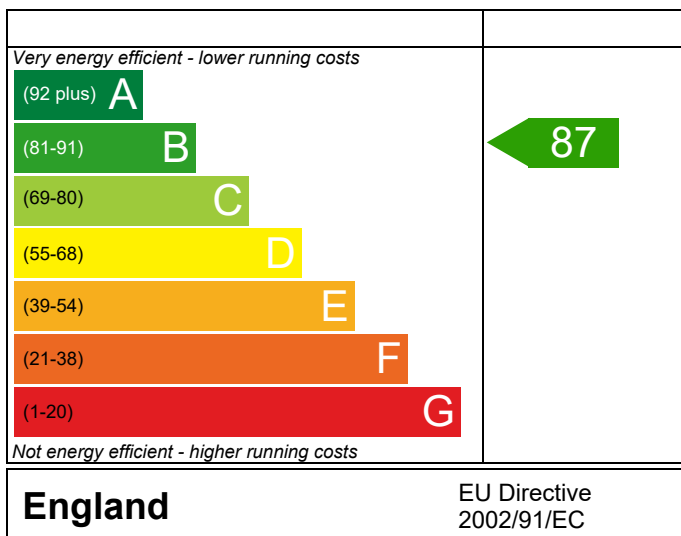
Plot 1, 15-27, Horndean Road,
Emsworth,
Hampshire

Dwelling type: House, Detached
Date of assessment: 20/03/2021
Produced by: Surecalc Limited
Total floor area: 101.6 m²
DRRN: 7229-1171-0035

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

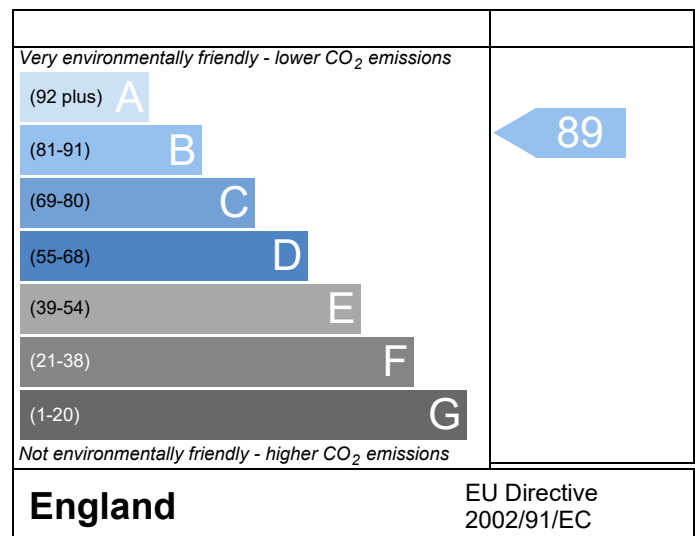
The energy performance has been assessed using the Government approved SAP2012 methodology and is rated in terms of the energy use per square meter of floor area; the energy efficiency is based on fuel costs and the environmental impact is based on carbon dioxide (CO₂) emissions.

Energy Efficiency Rating



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

Environmental Impact (CO₂) Rating



The environmental impact rating is a measure of a home's impact on the environment in terms of carbon dioxide (CO₂) emissions. The higher the rating the less impact it has on the environment.

This report has been produced by an accredited Elmhurst member whose work is subject to quality assurance audits. The data used to produce the report has been verified by the Elmhurst members' portal.



BUILDING REGULATION COMPLIANCE

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		TFEE	57.52
		% DLEE<TFEE	11.23
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SUMMARY FOR INPUT DATA FOR New Build (As Designed)

Criterion 1 – Achieving the TER and TEE rate

1a TER and DER

Fuel for main heating	Mains gas		
Fuel factor	1.00 (mains gas)		
Target Carbon Dioxide Emission Rate (TER)	18.10	kgCO ₂ /m ²	
Dwelling Carbon Dioxide Emission Rate (DER)	14.05	kgCO ₂ /m ²	Pass
	-4.05 (-22.4%)	kgCO ₂ /m ²	

1b TEE and DLEE

Target Fabric Energy Efficiency (TFEE)	57.52	kWh/m ² /yr	
Dwelling Fabric Energy Efficiency (DLEE)	51.06	kWh/m ² /yr	
	-6.4 (-11.1%)	kWh/m ² /yr	Pass

Criterion 2 – Limits on design flexibility

Limiting Fabric Standards

2 Fabric U-values

Element	Average	Highest	
External wall	0.25 (max. 0.30)	0.25 (max. 0.70)	Pass
Floor	0.15 (max. 0.25)	0.15 (max. 0.70)	Pass
Roof	0.11 (max. 0.20)	0.11 (max. 0.35)	Pass
Openings	1.40 (max. 2.00)	1.40 (max. 3.30)	Pass

2a Thermal bridging

Thermal bridging calculated from linear thermal transmittances for each junction

3 Air permeability

Air permeability at 50 pascals	5.00 (design value)	m ³ /(h.m ²) @ 50 Pa	
Maximum	10.0	m ³ /(h.m ²) @ 50 Pa	Pass

Limiting System Efficiencies

4 Heating efficiency

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Main heating system

Boiler system with radiators or underfloor - Mains gas
Data from database
Alpha Evoke 33
Combi boiler
Efficiency: 89.0% SEDBUK2009
Minimum: 88.0%

Pass

Secondary heating system

None

5 Cylinder insulation

Hot water storage

No cylinder

6 Controls

Space heating controls

Time and temperature zone control

Pass

Hot water controls

No cylinder

Boiler interlock

Yes

Pass

7 Low energy lights

Percentage of fixed lights with low-energy fittings

100 %

Minimum

75 %

Pass

8 Mechanical ventilation

Continuous extract system (decentralised)

Specific fan power

0.2000 0.1800

Maximum

0.7

Pass

Criterion 3 – Limiting the effects of heat gains in summer

9 Summertime temperature

Overheating risk (Southern England)

Slight

Pass

Based on:

Overshading

Average

Windows facing North East

1.36 m², No overhang

Windows facing South East

11.88 m², No overhang

Windows facing South West

1.36 m², No overhang

Windows facing North West

4.82 m², No overhang

Air change rate

4.00 ach

Blinds/curtains

None

Criterion 4 – Building performance consistent with DER and DFEE rate

Air permeability and pressure testing

3 Air permeability

Air permeability at 50 pascals

5.00 (design value) m³/(h.m²) @ 50 Pa

Maximum

10.0 m³/(h.m²) @ 50 Pa

Pass

10 Key features

Roof U-value

0.11 W/m²K

Thermal bridging y-value

0.024 W/m²K

Photovoltaic array

0.90 kW

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THERMAL BRIDGING

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	Junction detail	Source Type	Psi (W/mK)	Length (m)	Result	Reference
External wall	E2 Other lintels (including other steel lintels)	Independently assessed	0.050	14.36	0.72	IG Hi Therm Lintels
External wall	E3 Sill	Independently assessed	0.027	13.40	0.36	LABC Construction Detail
External wall	E4 Jamb	Independently assessed	0.029	37.50	1.09	LABC Construction Detail
External wall	E5 Ground floor (normal)	Independently assessed	0.048	29.35	1.41	LABC Construction Detail
External wall	E6 Intermediate floor within a dwelling	Independently assessed	0.003	29.35	0.09	LABC Construction Detail
External wall	E10 Eaves (insulation at ceiling level)	Independently assessed	0.083	13.15	1.09	LABC Construction Detail
External wall	E12 Gable (insulation at ceiling level)	Independently assessed	0.054	12.75	0.69	LABC Construction Detail
External wall	E16 Corner (normal)	Independently assessed	0.050	20.60	1.03	LABC Construction Detail
External wall	E17 Corner (inverted – internal area greater than external area)	Independently assessed	-0.091	5.15	-0.47	LABC Construction Detail

Total: **6.01** W/mK:
Y-Value: **0.024** W/m²K: