



SAP Report Submission for Building Regulations Compliance

Client: Vivid Design Studio

Project: Adj Church Lane Nursery, Plot 4, Church Lane/North End
Road
Yapton, West Sussex

Contact: Mark Rogers
Surecalc Limited



Report Issue Date: 28/10/2020

EXCELLENCE IN ENERGY ASSESSMENT

CODE FOR SUSTAINABLE HOMES

Calculation Type: New Build (As Designed)



Property Reference	sc121128	Issued on Date	28/10/2020
Assessment Reference	001	Prop Type Ref	New Dwelling
Property	Adj Church Lane Nursery, Plot 4, Church Lane/North End Road, Yapton, West Sussex		

SAP Rating	83 B	DER	16.55	TER	25.40
Environmental	85 B	% DER<TER	34.83		
CO ₂ Emissions (t/year)	1.89	DFEE	60.43	TFEE	61.08
General Requirements Compliance	Pass	% DFEE<TFEE	1.07		

Assessor Details	Mr. Mark Rogers, Surecalc Limited, [REDACTED]	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	135.29	m ²
DER	16.55	kgCO ₂ /yr/m ²
TER	25.40	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	16.55	kgCO ₂ /yr/m ²
Reduction DER/TER	34.83	%
CfSH ENE1 credits achieved	4.2	
CfSH ENE1 level achieved	4	

ENE 2 - Fabric Energy Efficiency calculation

Dwelling type	House, Detached
Fabric energy efficiency (F.E.E.)	60.43 kWh/m ² /yr
CfSH ENE2 credits achieved	0.0
CfSH ENE1 and 2 overall level achieved	4

ENE 7 - Low and Zero Carbon Technologies calculation

Standard case CO₂ emissions

Total floor area	135.29	m ²
DER	22.32	kgCO ₂ /yr/m ²
CO ₂ emissions from electrical appliances	13.31	kgCO ₂ /yr/m ² (ZC2)
CO ₂ emissions from cooking	1.40	kgCO ₂ /yr/m ² (ZC3)
Standard case total CO ₂ emissions	37.03	kgCO ₂ /yr/m ² (ZC4)
Net Standard case CO ₂ emissions	37.03	kgCO ₂ /yr/m ² (ZC8)

Actual case CO₂ emissions

DER	20.00	kgCO ₂ /yr/m ²
CO ₂ emissions from electrical appliances	13.31	kgCO ₂ /yr/m ² (ZC2)
CO ₂ emissions from cooking	1.40	kgCO ₂ /yr/m ² (ZC3)
Actual case total CO ₂ emissions	34.71	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	34.71	kgCO ₂ /yr/m ² (ZC8)
Improvement in net actual/net standard case CO ₂ emissions	6	%



ENE7 credits achieved

0

PREDICTED ENERGY ASSESSMENT

surecalc ltd

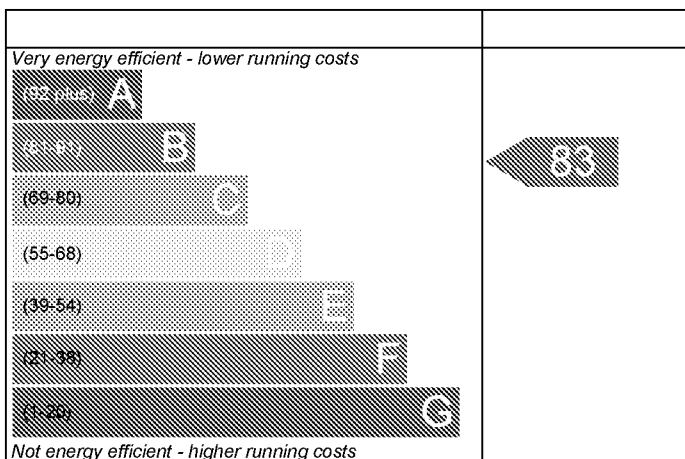
Adj Church Lane Nursery, Plot 4, Church
Lane/North End Road,
Yapton,
West Sussex

Dwelling type: House, Detached
Date of assessment: 28/10/2020
Produced by: Surecalc Limited
Total floor area: 135.29 m²
DRRN: 4338-2290-2604

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

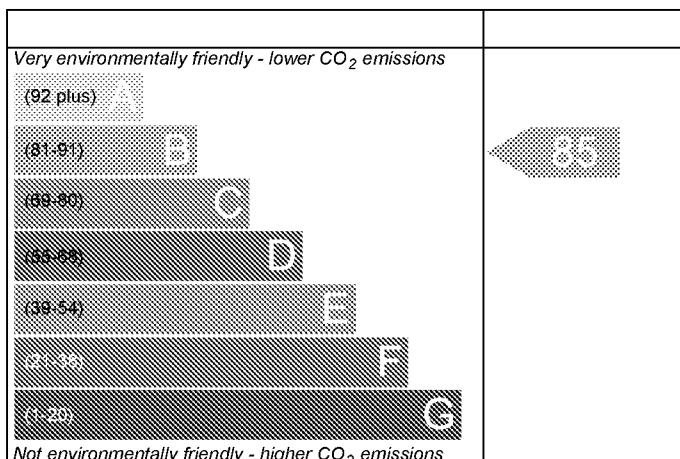


England

EU Directive
2002/91/EC

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

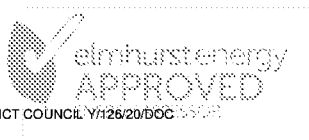


England

EU Directive
2002/91/EC

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.

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BUILDING REGULATION COMPLIANCE

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Client	Vivid Design Studio, Vivid Design Studio		

SUMMARY FOR INPUT DATA FOR New Build (As Designed)

Criterion 1 – Achieving the TER and TFEE rate

1a TER and DER

Fuel for main heating	Electricity		
Fuel factor	1.55 (electricity)		
Target Carbon Dioxide Emission Rate (TER)	25.40	kgCO ₂ /m ²	
Dwelling Carbon Dioxide Emission Rate (DER)	16.55	kgCO ₂ /m ²	Pass
	-8.85 (-34.8%)	kgCO ₂ /m ²	

1b TFEE and DFEE

Target Fabric Energy Efficiency (TFEE)	61.08	kWh/m ² /yr	
Dwelling Fabric Energy Efficiency (DFEE)	60.43	kWh/m ² /yr	
	-0.7 (-1.1%)	kWh/m ² /yr	Pass

Criterion 2 – Limits on design flexibility

Limiting Fabric Standards

2 Fabric U-values

Element	Average	Highest	
External wall	0.24 (max. 0.30)	0.27 (max. 0.70)	Pass
Floor	0.16 (max. 0.25)	0.22 (max. 0.70)	Pass
Roof	0.12 (max. 0.20)	0.14 (max. 0.35)	Pass
Openings	1.43 (max. 2.00)	1.80 (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	7.00 (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

Main heating system	Heat pump with radiators or underfloor - Electric Daikin Altherma EDLO07CAV3	
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Secondary heating system

None

5 Cylinder insulation

Hot water storage

Measured cylinder loss: 1.30 kWh/day
Permitted by DB5CG 2.24

Pass

Primary pipework insulated

Yes

Pass

6 Controls

Space heating controls

Time and temperature zone control

Pass

Hot water controls

Cylinderstat

Pass

Independent timer for DHW

Pass

7 Low energy lights

Percentage of fixed lights with low-energy fittings

100

%

Minimum

75

%

Pass

8 Mechanical ventilation

Not applicable

Criterion 3 – Limiting the effects of heat gains in summer

9 Summertime temperature

Overheating risk (South East England)

Slight

Pass

Based on:

Overshading

Average

Windows facing North

0.74 m², No overhang

Windows facing East

15.48 m², No overhang

Windows facing West

4.00 m², Overhang twice as wide as window, ratio 0.80

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

7.00 (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

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	[REDACTED]		A320-0001
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SUMMARY FOR INPUT DATA FOR: New Build (As Designed)

Orientation	West
Property Tenure	Unknown
Transaction Type	New dwelling
Terrain Type	Suburban
1.0 Property Type	House, Detached
2.0 Number of Storeys	2
3.0 Date Built	2020
4.0 Sheltered Sides	1
5.0 Sunlight/Shade	Average or unknown

6.0 Measurements	Heat Loss Perimeter	Internal Floor Area	Average Storey Height
	Ground Floor: 37.87 m	69.86 m ²	2.39 m
	1st Storey: 38.93 m	65.43 m ²	2.76 m

7.0 Living Area	22.77	m ²
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8.0 Thermal Mass Parameter	Simple calculation - Medium	
Thermal Mass	250.00	kJ/m²K

9.0 External Walls		U-Value (W/m ² K)	Gross Area (m ²)	Nett Area (m ²)
Description	Type			
External Brick Wall	Cavity Wall	0.25	119.58	103.39
Dwelling to Garage	Solid Wall	0.21	20.08	18.12
Dormers	Timber Frame	0.27	18.45	12.41

10.0 External Roofs		U-Value (W/m ² K)	Gross Area (m ²)	Nett Area (m ²)
Description	Type			
External Roof	External Plane Roof	0.11	50.54	50.54
External Roof Skilling	External Slope Roof	0.14	36.54	34.26

11.0 Heat Loss Floors		U-Value (W/m ² K)	Area (m ²)
Description	Type		
Ground Floor	Ground Floor - Solid	0.15	71.43
First Floor Over Garage	Exposed Floor - Timber	0.22	11.52

12.0 Opening Types

SUMMARY FOR INPUT DATA

Calculation Type: New Build (As Designed)



Description	Data Source	Type	Glazing	Glazing Gap	Argon Filled	G-value	Frame Type	Frame Factor	U Value (W/m²K)
New Dwelling DG Door	Manufacturer	Half Glazed Door	Double Low-E Soft 0.05			0.71		0.70	1.40
New Dwelling DG Window	Manufacturer	Window	Double Low-E Soft 0.05			0.71		0.70	1.40
New Dwelling Fire Door	Manufacturer	Solid Door							1.80
New Dwelling DG Rooflight	Manufacturer	Roof Window	Double Low-E Soft 0.05			0.64		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
Front West Door	Half Glazed Door	[1] External Brick Wall	West							2.01	
Front West Window	Window	[1] External Brick Wall	West	None	0.80	Yes				0.72	
Front West Windows	Window	[1] External Brick Wall	West	None	0.00					1.64	
Front West Window	Window	[3] Dormers	West	None	0.00					1.64	
Front West Rls	Roof Window	[2] External Roof Skilling	West	None						1.52	
Garage Fire Door	Solid Door	[2] Dwelling to Garage	West							1.96	
Rear East RL	Roof Window	[2] External Roof Skilling	East	None						0.76	
Rear East Windows	Window	[3] Dormers	East	None	0.00					4.40	
Rear East Windows	Window	[1] External Brick Wall	East	None	0.00					11.08	
Side North Window	Window	[1] External Brick Wall	North	None	0.00					0.74	

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	Reference:
Independently assessed	E2 Other lintels (including other steel lintels)	9.32	0.291	No	LABC Construction Detail
Table K1 - Default	E2 Other lintels (including other steel lintels)	4.96	1.000	No	
Independently assessed	E3 Sill	8.37	0.027	No	LABC Construction Detail
Table K1 - Default	E3 Sill	4.96	0.080	No	
Independently assessed	E4 Jamb	25.50	0.029	No	LABC Construction Detail
Table K1 - Default	E4 Jamb	7.20	0.100	No	
Independently assessed	E5 Ground floor (normal)	27.56	0.048	No	LABC Construction Detail
Table K1 - Default	E5 Ground floor (normal)	8.40	0.320	No	
Table K1 - Default	E20 Exposed floor (normal)	13.60	0.320	No	
Independently assessed	E6 Intermediate floor within a dwelling	31.01	0.003	No	LABC Construction Detail
Independently assessed	E11 Eaves (insulation at rafter level)	15.52	0.029	No	LABC Construction Detail
Independently assessed	E12 Gable (insulation at ceiling level)	12.56	0.054	No	LABC Construction Detail
Independently assessed	E13 Gable (insulation at rafter level)	14.40	0.052	No	LABC Construction Detail
Independently assessed	E16 Corner (normal)	26.12	0.050	No	LABC Construction Detail
Independently assessed	E17 Corner (inverted – internal area greater than external area)	5.52	-0.091	No	LABC Construction Detail
Table K1 - Default	R1 Head of roof window	2.34	0.080	No	
Table K1 - Default	R2 Sill of roof window	2.34	0.060	No	
Table K1 - Default	R3 Jamb of roof window	5.28	0.080	No	
Table K1 - Default	R6 Flat ceiling	14.13	0.060	No	

Y-value

0.069

W/m²K

SUMMARY FOR INPUT DATA

Calculation Type: New Build (As Designed)



18.0 Pressure Testing

Designed AP ₅₀	Yes	
Property Tested ?	7.00	m ³ /(h.m ²) @ 50 Pa
As Built AP ₅₀		m ³ /(h.m ²) @ 50 Pa

19.0 Mechanical Ventilation

Summer Overheating

Windows open in hot weather	Windows half open
Cross ventilation possible	Yes
Night Ventilation	Yes
Air change rate	4.00

Mechanical Ventilation

Mechanical Ventilation System Present	No
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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				6
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	100	
Total number of L.E.L. fittings	100	
Percentage of L.E.L. fittings	100.00	%

External

External lights fitted	Yes
Light and motion sensor	Yes

23.0 Electricity Tariff

Standard

24.0 Main Heating 1

Description	Database	
Percentage of Heat	Air Source Heat Pump	%
Database Ref. No.	102431	
Fuel Type	Electricity	
Main Heating	PET	
SAP Code	224	
In Winter	361.6	
In Summer	189.0	
Controls	CHD Time and temperature zone control	
PCDF Controls	0	
Sap Code	2207	
Is MHS Pumped	Pump in heated space	
Heat Emitter	Radiators and Underfloor	
Underfloor Heating	Yes - Pipes in thin screed	
Flow Temperature	Normal (> 45°C)	

25.0 Main Heating 2

None

SUMMARY FOR INPUT DATA

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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	Yes
29.0 Hot Water Cylinder	Hot Water Cylinder
Cylinder Stat	Yes
Cylinder In Heated Space	Yes
Independent Time Control	Yes
Insulation Type	Measured Loss
Cylinder Volume	200.00 L
Loss	1.30 kWh/day
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	£93	B 85	
	Typical Cost	Typical savings per year	Ratings after improvement	
			SAP rating	Environmental Impact
Solar photovoltaic panels, 2.5 kWp	£3,500 - £5,500	£360	A 92	

U-VALUE CALCULATOR REPORT

surecalc ltd

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Building Elements

Roof 000002 - Pitched Roof Insulated Ceiling Vivid

Roof Type: Pitched Roof, insulated flat ceiling

Layer	Description	Thickness (mm)	Conductivity (W/m ² K)	Resistance (m ² K/W)	Fraction (%)
Ext surface				0.0400	
Layer 1	Loft Space				
	Main construction	0	0.0600	0.0600	100.00
Layer 2	Mineral wool				
	Main construction	250	0.0440	5.6818	100.00
	Corrections - Air Gap: Level 0, Fasteners: None or plastic				
Layer 3	Mineral wool quilt				
	Main construction	150	0.0440	3.4091	91.67
	Main construction	150	0.1300	1.1538	8.33
	Corrections - Air Gap: Level 0, Fasteners: None or plastic				
Layer 4	Plasterboard, standard				
	Main construction	12.5	0.2100	0.0595	100.00
Int surface				0.1000	

Total resistance: Upper limit = 9.109 m² K/W Lower limit = 8.873 m² K/W Average = 8.991 m² K/W
Total correction = 0.0030 m² K/W U-value (unrounded) = 0.11 W/m² K

Unheated space: None

Total thickness: 413 mm

U-value: 0.11 W/m² K

Kappa: n/a

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Building Elements

Roof 000007 - Pitched Roof Skelling

Roof Type: Pitched Roof, insulated sloping ceiling

Layer	Description	Thickness (mm)	Conductivity (W/m ² K)	Resistance (m ² K/W)	Fraction (%)	Density (kg/m ³)	Heat Cap. (J/kgK)
Ext surface				0.0400			
Layer 1	Tiles, clay						
	Main construction	15	1.0000	0.0150	100.00		
Layer 2	airspace/timber battens						
	Main construction	25	0.1000	0.2500	89.63		
	Main construction	25	0.1563	0.1600	10.37		
	Corrections - Cavity Unventilated, Emissivity: Normal						
Layer 3	Breather membrane						
	Main construction	0.5	0.0000	0.0000	100.00		
Layer 4	Air layer unventilated						
	Main construction	45	0.0973	0.4624	92.17		
	Main construction	45	0.1300	0.3462	7.83		
	Corrections - Cavity Unventilated, Emissivity: Low Emissivity (BR443)						
Layer 5	Thermapitch TP10						
	Main construction	100	0.0220	4.5455	92.17		
	Main construction	100	0.1300	0.7692	7.83		
	Corrections - Air Gap: Level 1, Fasteners: None or plastic						
Layer 6	Kooltherm K18 Insulated Plasterboard (62.5mm)						
	Main construction	62.5	0.0245	2.5500	100.00		
	Corrections - Air Gap: Level 1, Fasteners: None or plastic						
Int surface				0.1000			

Total resistance: Upper limit = 7.418 m² K/W Lower limit = 6.675 m² K/W Average = 7.046 m² K/W
Total correction = 0.0035 m² K/W U-value (unrounded) = 0.14 W/m² K

Unheated space: None

Total thickness: 248 mm

U-value: 0.14 W/m² K

Kappa: 0.00 kJ/m² K

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Building Elements

Wall 000001 - Vivid 100 Cavity Wall Knauf Supafil 34

Wall Type: Standard Wall

Layer	Description	Thickness (mm)	Conductivity (W/m ² K)	Resistance (m ² K/W)	Fraction (%)
Ext surface				0.0400	
Layer 1	Brick, outer leaf				
	Main construction	102	0.7700	0.1325	82.81
	Main construction	102	0.9407	0.1084	17.19
Layer 2	Knauf Supafil 34 blown Cavity Fill				
	Main construction	100	0.0340	2.9412	100.00
	Corrections - Air Gap: Level 1, Fasteners: None or plastic				
Layer 3	Celcon Standard - Normal - Trad joint 10mm				
	Main construction	100	0.1500	0.6667	93.18
	Main construction	100	0.8803	0.1136	6.82
Layer 4	airspace/plaster dabs				
	Main construction	15	0.1000	0.1500	80.00
	Main construction	15	0.0882	0.1700	20.00
	Corrections - Cavity Unventilated, Emissivity: Normal				
Layer 5	Plasterboard, standard				
	Main construction	12.5	0.2100	0.0595	100.00
Int surface				0.1300	

Total resistance: Upper limit = 4.077 m² K/W Lower limit = 3.952 m² K/W Average = 4.015 m² K/W
Total correction = 0.0054 m² K/W U-value (unrounded) = 0.25 W/m² K

Unheated space: None

Total thickness: 330 mm

U-value: 0.25 W/m² K

Kappa: n/a

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Building Elements

Wall 000005 - Dry Lined Solid Masonry Wall

Wall Type: Standard Wall

Layer	Description	Thickness (mm)	Conductivity (W/m ² K)	Resistance (m ² K/W)	Fraction (%)	Density (kg/m ³)	Heat Cap. (J/kgK)
Ext surface				0.0400			
Layer 1	Celcon Standard - Normal - Trad joint 10mm						
	Main construction	140	0.1500	0.9333	93.18		
	Main construction	140	0.8803	0.1590	6.82		
Layer 2	Kooltherm K18 Insulated Plasterboard (92.5mm)						
	Main construction	92.5	0.0228	4.0500	100.00		
	Corrections - Air Gap: Level 1, Fasteners: None or plastic						
Int surface				0.1300			

Total resistance:	Upper limit = 5.092 m ² K/W	Lower limit = 4.921 m ² K/W	Average = 5.006 m ² K/W
	Total correction = 0.0065 m ² K/W	U-value (unrounded) = 0.21 W/m ² K	

Unheated space: None

Total thickness: 233 mm

U-value: 0.21 W/m² K

Kappa: 0.00 kJ/m² K

U-VALUE CALCULATOR REPORT

surecalc ltd

Property Reference	sc121128	Issued on Date	28/10/2020
Assessment Reference	001	Prop Type Ref	New Dwelling
Project	Adj Church Lane Nursery, Plot 4, Church Lane/North End Road, Yapton, West Sussex		
Calculation Type	New Build (As Designed)		

SAP Rating	83 B	DER	16.55	TBR	25.40
Environmental	85 B	% DER < TBR	34.83		
CO ₂ Emissions (t/year)	1.89	DREE	60.43	TREE	61.08
General Requirements Compliance	Pass	% DPER < TPER	1.07		

Assessor Details	Mr. Mark Rogers, Surecalc Limited	Assessor ID	A320-0001
Client	Vivid Design Studio, Vivid Design Studio		

Building Elements

Wall 000006 - TF Lead Clad Stud

Wall Type: Standard Wall

Layer	Description	Thickness (mm)	Conductivity (W/m ² K)	Resistance (m ² K/W)	Fraction (%)
Ext surface				0.0400	
Layer 1	Code 4 Lead				
	Main construction	1.5	35.0000	0.0000	100.00
Layer 2	Plywood				
	Main construction	12	0.1300	0.0923	100.00
Layer 3	Thermapitch TP10				
	Main construction	90	0.0220	4.0909	87.50
	Main construction	90	0.1300	0.6923	12.50
	Corrections - Air Gap: Level 1, Fasteners: None or plastic				
Layer 4	Standard cavity				
	Main construction	60	0.0902	0.6651	87.50
	Main construction	60	0.1300	0.4615	12.50
	Corrections - Cavity Unventilated, Emissivity: Normal				
Layer 5	Plasterboard, standard				
	Main construction	12.5	0.2100	0.0595	100.00
Int surface				0.1300	

Total resistance: Upper limit = 4.017 m² K/W Lower limit = 3.487 m² K/W Average = 3.752 m² K/W
Total correction = 0.0046 m² K/W U-value (unrounded) = 0.27 W/m² K

Unheated space: None

Total thickness: 176 mm

U-value: 0.27 W/m² K

Kappa: n/a

U-VALUE CALCULATOR REPORT

surecalc ltd

Property Reference	sc121128	Issued on Date	28/10/2020
Assessment Reference	001	Prop Type Ref	New Dwelling
Project	Adj Church Lane Nursery, Plot 4, Church Lane/North End Road, Yapton, West Sussex		
Calculation Type	New Build (As Designed)		

SAP Rating	83 B	DER	16.55	TBR	25.40
Environmental	85 B	% DER<TBR	34.83		
CO ₂ Emissions (t/year)	1.89	DREE	60.43	TREE	61.08
General Requirements Compliance	Pass	% DPER<TPER	1.07		

Assessor Details	Mr. Mark Rogers, Surecalc Limited	Assessor ID	A320-0001
Client	Vivid Design Studio, Vivid Design Studio		

Building Elements

Floor 000003 - Vivid GF Beam & Block

Floor Type: Suspended Floor

Area = 71.43 m², Perimeter = 39.41 m, Wall thickness = 300.00 mm, Soil: Unknown

Depth of underfloor space below ground: 0.200 m Floor wind shielding: Average (suburban)

Floor height above ground: h = 0.000 m

U-value of walls above ground: U_w = 1.500 m

Ventilation openings per perimeter length: e = 0.0015 %

Mean wind speed: v = 5.000 m/s

Resistance on solum: R_g = 0.000 m²K/W

Layer	Description	Thickness (mm)	Conductivity (W/m ² K)	Resistance (m ² K/W)	Fraction (%)
Ext surface				0.1700	
Layer 1	Celcon Flooring -				
	Main construction	100	0.1500	0.6667	90.91
	Main construction	100	1.0000	0.1000	9.09
Layer 2	Thermafloor TF70 zero ODP				
	Main construction	100	0.0220	4.5455	100.00
	Corrections - Air Gap: Level 1, Fasteners: None or plastic				
Layer 3	Screed				
	Main construction	65	1.1500	0.0565	100.00
Int surface				0.1700	

Total resistance: Upper limit = 5.552 m² K/W Lower limit = 5.382 m² K/W Average = 5.467 m² K/W

Total correction = 0.0069 m² K/W

U-value (unrounded) = 0.15 W/m² K

Unheated space: None

Total thickness: 265 mm

U-value: 0.15 W/m² K

Kappa: n/a

U-VALUE CALCULATOR REPORT

surecalc ltd

Property Reference	sc121128	Issued on Date	28/10/2020
Assessment Reference	001	Prop Type Ref	New Dwelling
Project	Adj Church Lane Nursery, Plot 4, Church Lane/North End Road, Yapton, West Sussex		
Calculation Type	New Build (As Designed)		

SAP Rating	83 B	DER	16.55	TBR	25.40
Environmental	85 B	% DER<TBR	34.83		
CO ₂ Emissions (t/year)	1.89	DREE	60.43	TREE	61.08
General Requirements Compliance	Pass	% DPER<TPER	1.07		

Assessor Details	Mr. Mark Rogers, Surecalc Limited	Assessor ID	A320-0001
Client	Vivid Design Studio, Vivid Design Studio		

Building Elements

Floor 000008 - Floor Over Garage

Floor Type: Exposed Floor

Layer	Description	Thickness (mm)	Conductivity (W/m ² K)	Resistance (m ² K/W)	Fraction (%)
Ext surface				0.0400	
Layer 1	Plasterboard, standard				
	Main construction	12	0.2100	0.0571	100.00
Layer 2	Mineral wool quilt				
	Main construction	200	0.0400	5.0000	92.17
	Main construction	200	0.1300	1.5385	7.83
	Corrections - Air Gap: Level 1, Fasteners: None or plastic				
Layer 3	Chipboard				
	Main construction	22	0.1300	0.1692	100.00
Int surface				0.1700	

Total resistance: Upper limit = 4.780 m² K/W Lower limit = 4.687 m² K/W Average = 4.734 m² K/W
Total correction = 0.0081 m² K/W U-value (unrounded) = 0.22 W/m² K

Unheated space: None

Total thickness: 234 mm

U-value: 0.22 W/m² K

Kappa: n/a

THERMAL BRIDGING

Calculation Type: New Build (As Designed)



Property Reference	sc121128	Issued on Date	28/10/2020
Assessment Reference	001	Prop Type Ref	New Dwelling
Property	Adj Church Lane Nursery, Plot 4, Church Lane/North End Road, Yapton, West Sussex		
SAP Rating	83 B	gEIR	16.55
Environmental	85 B	% DER<TER	34.83
CO ₂ Emissions (t/year)	1.89	DEFE	60.43
General Requirements Compliance	Pass	% DEFE<TEFE	1.07
Assessor Details	Mr. Mark Rogers, Surecalc Limited, [REDACTED]		Assessor ID
			A320-0001
Client	Vivid Design Studio, Vivid Design Studio		

	Junction detail	Source Type	Psi (W/mK)	Length (m)	Result	Reference
External wall	E2 Other lintels (including other steel lintels)	Independently assessed	0.291	9.32	2.71	LABC Construction Detail
External wall	E2 Other lintels (including other steel lintels)	Table K1 - Default	1.000	4.96	4.96	
External wall	E3 Sill	Independently assessed	0.027	8.37	0.23	LABC Construction Detail
External wall	E3 Sill	Table K1 - Default	0.080	4.96	0.40	
External wall	E4 Jamb	Independently assessed	0.029	25.50	0.74	LABC Construction Detail
External wall	E4 Jamb	Table K1 - Default	0.100	7.20	0.72	
External wall	E5 Ground floor (normal)	Independently assessed	0.048	27.56	1.32	LABC Construction Detail
External wall	E5 Ground floor (normal)	Table K1 - Default	0.320	8.40	2.69	
External wall	E20 Exposed floor (normal)	Table K1 - Default	0.320	13.60	4.35	
External wall	E6 Intermediate floor within a dwelling	Independently assessed	0.003	31.01	0.09	LABC Construction Detail
External wall	E11 Eaves (insulation at rafter level)	Independently assessed	0.029	15.52	0.45	LABC Construction Detail
External wall	E12 Gable (insulation at ceiling level)	Independently assessed	0.054	12.56	0.68	LABC Construction Detail
External wall	E13 Gable (insulation at rafter level)	Independently assessed	0.052	14.40	0.75	LABC Construction Detail
External wall	E16 Corner (normal)	Independently assessed	0.050	26.12	1.31	LABC Construction Detail
External wall	E17 Corner (inverted -- internal area greater than external area)	Independently assessed	-0.091	5.52	-0.50	LABC Construction Detail
External roof	R1 Head of roof window	Table K1 - Default	0.080	2.34	0.19	
External roof	R2 Sill of roof window	Table K1 - Default	0.060	2.34	0.14	
External roof	R3 Jamb of roof window	Table K1 - Default	0.080	5.88	0.47	
External roof	R6 Flat ceiling	Table K1 - Default	0.060	14.13	0.85	

THERMAL BRIDGING

Calculation Type: New Build (As Designed)



Total:	22.54	W/mK:
Y-Value:	0.069	W/m²K: