

Client : Wickford (Holdings) Limited
C/o KMDS Designs

Calculation : Thermal Check in Accordance with
Approved Document L1A (2013)

Calculation Ref : SAP/2018/009/07



Dwelling Address or House Type :

Units 20 to 27, 35 to 45 and 50
Warden Bay Caravan Park, Leysdown on Sea, Isle of Sheppey, ME12

Building Regulation L1(a)(i) Compliance

Target Emissions Rate (CO ₂)	23.96
Dwelling Emissions Rate (CO ₂)	14.64
Dwelling Emissions ≤ Target Emissions, therefore :	PASS
Percentage of Carbon Emissions Improvement	38.9%

Target Fabric Energy Efficiency	62.00
Actual Fabric Energy Efficiency	59.90
Actual ≤ Target, therefore :	PASS

SAP Energy Rating	79
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The risk of solar over heating has been assessed as : and therefore complies with ADL1A, paragraph 2.40	Medium
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<u>CONSTRUCTION & INSULATION</u>	<u>U-Value</u> (W/m²K)
<u>External wall</u> External cladding, battens, foil faced felt, 9mm OSB, 140mm timber frame with injected PIR insulation, reflective foil, 35mm battens, 12.5mm plasterboard - U value from supplier Flight Timber Products - Heat capacity = $0.0125 \times 700 = 8.75$	0.19
<u>Stud Partitions</u> Timber frame stud with 12.5mm plasterboard on both sides - Heat capacity = $0.0125 \times 700 = 8.75$	0.00
<u>Roof</u> Traditional pitched roof with 200mm Knauf Loft Roll 44 between the joists and a further 200mm Loft Roll 44 cross laid over both. Joists assumed 200 x 50mm at 400mm centres. Heat capacity = 8.75	0.11
<u>Ground Floor</u> 22mm T & G flooring, 100 x 50mm timber battens with 100mm Kingspan Thermafloor TF70 between, DPM, solid concrete slab Heat capacity = $0.022 \times 1.6 \times 500 = 17.6$	0.25
<u>Windows and French Doors</u> PVCu frame, double glazed with low "E" glass etc.... To achieve average U value as shown	1.20
The above notes may not include all elements, such as membranes or vapour barriers	

<u>Heating, Orientation & Ventilation</u>	
<u>Primary Space & Water Heating</u> Vokera Compact 29A condensing combi boiler, using bottled gas, serving radiators throughout and domestic hot water Minimum boiler SEDBUK rating as shown (2009 definition)	<u>SEDBUK</u> 89.2%
<u>Space Heating Controls :</u> Full time and temperature zone controls plus boiler interlock device PLUS weather compensating device	
<u>Secondary Heating</u> None present	
<u>Photovoltaic Panel</u> 4 number panels, each producing 0.37 kW.h peak power - laid on roof, facing East or West	
<u>Low Energy Internal Lighting</u> Assumed 100% of fixed light fittings include Low Energy Lamps	
<u>Orientation and Shading :</u> French Doors face South with two sides sheltered with average overshadowing.	
<u>Air Permeability & Ventilation</u> Air permeability taken as $4.80 \text{ m}^3/\text{hr}/\text{m}^2$. Natural ventilation with 2 intermittent extracts	

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Thermal Bridging

Thermal bridging at openings and junctions of external walls with roofs & floors etc, are assumed to comply with details below. An appropriate system will be set in place by the builder to monitor and confirm their implementation - this system to be agreed with Building Control

Thermal bridging at the following junctions will comply with current Accredited Construction Details (2006)

<u>Item</u>	<u>Junction in or with external wall</u>	<u>ψ value</u>
E2	Lintels - detail TFW - WD - 01	0.300
E3	Cills - detail TFW - WD - 02	0.040
E4	Reveals - detail TFW - WD - 03	0.050
E5	Ground floor - detail TFW - GF - 03	0.160
E10	Eaves - roof insulation at ceiling level - detail TFW - RE - 01	0.060
E12	Gable - roof insulation at ceiling level - detail TFW - RG - 01	0.240
E16	External corners of external walls - detail TFW - EW - 01	0.090

The Accredited Details may be found on the link below

<http://www.planningportal.gov.uk/buildingregulations/approveddocuments/partl/bcassociateddocuments9/acd>

Warden Bay Caravan Park, Leysdown on Sea, Isle of Sheppey, ME12

ACTUAL ELEMENT AREAS

GROUND FLOOR	4.96	x	9.45			=	46.87	m²				
U PERIMETRE	4.96	+	9.45	+	14.41	=	28.82	m				
ROOF	4.96	x	9.45			=	46.87	m²				
WINDOWS	Facing front											
	2.60	x	2.22			=	5.77	m²				
	Facing left											
	(0.45	x	1.05) + (1.20	x	0.90)	=	1.55	m²
	Facing right											
	2.40	x	1.20			=	2.88	m²				
	Total						=	10.20	m²			
NETT EXTERNAL WALL	(28.82	x	2.39) -	10.20	=	58.68	m²			
PARTITIONS	13.87	x	2.00	x	2.39	=	66.30	m²				
ZONE 1	(4.96	x	3.65) + (1.85	x	3.80)	=	25.13	m²

THERMAL BRIDGING - JUNCTIONS WITH EXTERNAL WALL

Other lintels	0.45	+	1.20	+	2.60	+	1.20	+	1.20	=	6.65	E2						
Cills	6.65	-	2.60							=	4.05	E3						
Jambs (2.00	x	2.22) + (4.00	x	1.20) + (2.00	x	1.05) + (2.00	x	0.90) =	13.14	E4
Ground floor										=	28.82	E5						
Eaves - ins at ceiling level	9.45	+	9.45							=	18.90	E10						
Gable - ins at ceiling level	4.96	+	4.96							=	9.92	E12						
Corners (external)	4.00	x	2.39							=	9.56	E16						

Project Information

Building type	Detached bungalow		
Reference	SAP/2018/009/07		
Date	30 June 2021		
Client	Wickford (Holdings) Limited	Project	Bungalow Type B
	C/o KMDS Designs		Units 20 to 27, 35 to 45 and 50
			Warden Bay Caravan Park
			Leysdown on Sea
			Isle of Sheppey
			ME12

REGULATION COMPLIANCE REPORT - Approved Document L1A, 2012 Edition, England

assessed by program JPA Designer version 6.05.050, printed on 30/06/2021 at 15:01:57

New dwelling as designed

1 TER and DER

Fuel for main heating system: Bottled LPG (fuel factor = 1.06)

Target Carbon Dioxide Emission Rate	TER = 23.96	
Dwelling Carbon Dioxide Emission Rate	DER = 14.64	OK

1b TFEE and DFEE

Target Fabric Energy Efficiency (TFEE)	TFEE = 62.0	
Dwelling Fabric Energy Efficiency (DFEE)	DFEE = 59.9	OK

2a Thermal bridging

Thermal bridging calculated from linear thermal transmittances for each junction

2b Fabric U-values

Element	Average	Highest	
Wall	0.19 (max. 0.30)	0.19 (max. 0.70)	OK
Floor	0.25 (max. 0.25)	0.25 (max. 0.70)	OK
Roof	0.11 (max. 0.20)	0.11 (max. 0.35)	OK
Openings	1.20 (max. 2.00)	1.20 (max. 3.30)	OK

3 Air permeability

Air permeability at 50 pascals:	4.80	
Maximum :	10.00	OK

4 Heating efficiency

Main heating system:

Boiler and radiators, LPG

Vokera Compact

Source of efficiency:

from boiler database

Vokera Compact 29A

Efficiency: 89.2% SEDBUK2009

Minimum: 88.0%

OK

Secondary heating system:

None -

5 Cylinder insulation

Hot water storage No cylinder

6 Controls

(Also refer to "Domestic Building Services Compliance Guide" by the DCLG)

Space heating controls	Time and temperature zone control	OK
Hot water controls	No cylinder	
Boiler Interlock	Yes	OK
Hot water controls	No cylinder	

7 Low energy lights

Percentage of fixed lights with low-energy fittings: 100.0%	
Minimum: 75.0%	OK

8 Mechanical ventilation

Not applicable

9 Summertime temperature

Overheating risk (South East England):		OK
	Medium	OK

Based on:

Thermal mass parameter :	110.08
Overshading :	Average or unknown (20-60 % sky blocked)
Orientation : South	
Ventilation rate :	3.00
Blinds/curtains :	
None with blinds/shutters closed 0.00% of daylight hours	

10 Key features

Pitched roofs insulated between joists U-value 0.11 W/m²K
Photovoltaic array

Predicted Energy Assessment

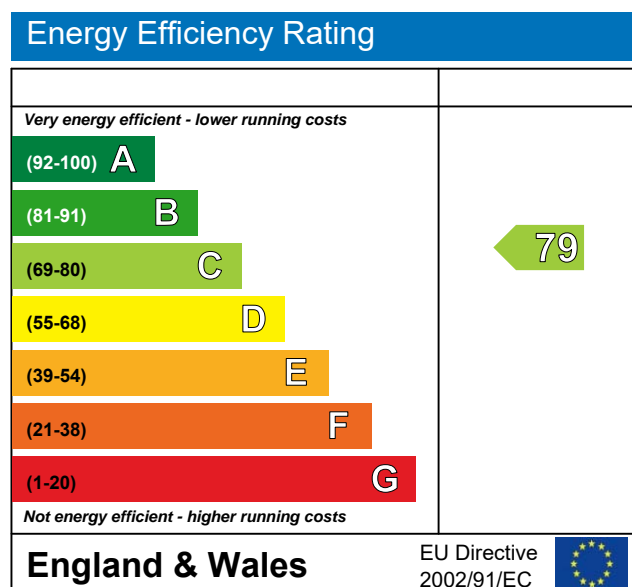
Bungalow Type B
Units 20 to 27, 35 to 45 and 50
Warden Bay Caravan Park
Leysdown on Sea
Isle of Sheppey
ME12
Ref: SAP/2018/009/07

Dwelling type:
Date of assessment:
Produced by
Total floor area:

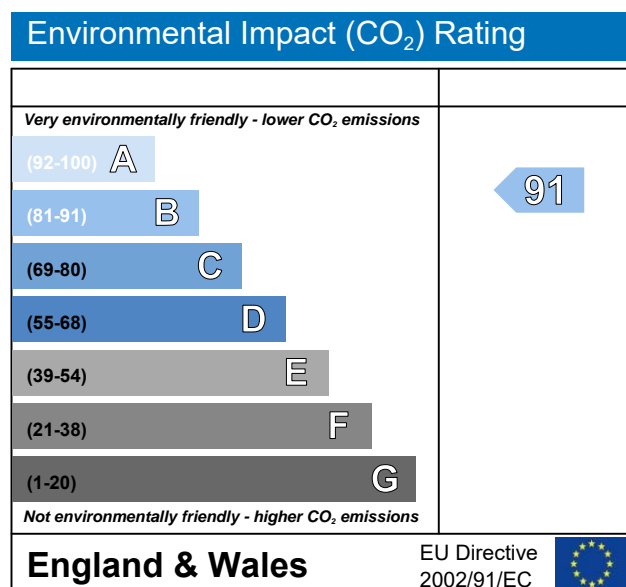
Detached bungalow
30 June 2021
Thermal Solutions
47 m²

This is a Predicted Energy Assessment for a property which is not yet complete. It includes a predicted energy rating which might not represent the final energy rating of the property on completion. Once the property is completed, an Energy Performance Certificate is required providing information about the energy performance of the completed property.

Energy performance has been assessed using the SAP 2012 methodology and is rated in terms of the energy use per square metre of floor area, energy efficiency based on fuel costs and environmental impact based on carbon dioxide (CO₂) emissions.



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.



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.