

# RightsiZED

Sept 2020

**zedPower**<sup>TM</sup>  
zero fossil energy developments





# About us- From BedZED to RightsiZED affordable homes

## 20 years of architecture and master planning designing out fossil fuels

We have spent the last two decades designing and building energy positive homes powered by building integrated photovoltaics. These projects are working well and have the potential for net zero annual energy bills as well as being climate neutral over the building's anticipated lifespan.

So the question is how do we make this specification affordable to everyone requiring housing ?





# 1.1 Introduction - RightsiZED Homes

The RightsiZED unit is made from a simple kit of parts that can be assembled in a tent purchased with the kit, a high barn or any industrial shed with a large door.

The home is designed to last as long or longer than a conventional mortgageable home and is built to higher standards of energy efficiency with off grid capability and the highest standards of airtightness, super insulation and heat recovery ventilation incorporated as standard. No toxic urethane foam insulation or Grenfell materials are used and the homes do not rust from the inside like shipping containers. All homes are designed to be clad in energy harvesting monocrystalline solar electric panels capable of generating enough electricity to meet a sensible lifestyle. Options on off grid electronics and lipo4 battery storage give further flexibility on sitting these tiny homes.

This means almost anyone can now build their own home that will last a lifetime. The tooling up costs are very low and an instruction manual makes it hard not to assemble the precision cut FSC ply components perfectly. The RightZED homes have a standing seam roof with over 50 years life expectancy, low maintenance double or triple glazed thermally broken aluminium doors and windows with toughened glass on both sides and cladding options ranging from oiled chestnut to cedar or treated softwood or zinc.

We believe this is a high spec and robust local affordable housing solution if land can be made available to those who need it.





# Tiny House Standards

If your Tiny House is going to replace a traditional home, it must be equivalent or better in build quality.

It should be a trade off where 'Less is More'. Quantity and floor area should be traded off against improved quality and reduced **environmental impact** :

## Energy Efficiency

- U value of walls ceiling and floor minimum 0.15 W/ m2 / deg C with thermal bridging minimised
- Airtightness of 1.0 Air changes / hour @ 50 pascals test pressure
- Vapour permeable air tightness membrane stops moisture being trapped in the wall construction
- Heat recovery ventilation required in main habitable room volume
- All windows openable to maximise summer cross ventilation
- Thermally broken aluminium frames with both inner and outer panes of toughened glass
- Reversible airsource heat pump ducted air heating / cooling system
- Long life LED lights with options for indirect ceiling lighting to avoid light pollution
- Minimum 6 kwh of chemically stable LIPO4 battery storage to store renewable energy

## Weight

- 3.5 tonnes weight limit laden inclusive of trailer self weight and structural frame with windows and doors fitted

## Water efficiency

- Spray taps and showers to be fitted
- Ability to fit a waterless composting toilet

## External Dimensions

- 6.5m long x 2.55m wide trailer base is the maximum practical dimension for towing
- On trailer height must be capped at 4.1m high to fit under road bridges
- Installed height must be capable of being under 4.0m to fit within some planning restrictions
- Each Tiny House to have at least one outdoor balcony deck of 2.55m x 2.55m accessed by a patio door

## Demount-ability and maintenance

- All fixing screws to be torx head to facilitate future maintenance and to ensure adequate assembly torque during construction without burring heads
- Individual wall and floor panels to be easily removed for long life / loose fit changes in structural openings / doors and windows

## Siting flexibility

- Off grid electric capability must be built into the design
- Ability to orientate solar panels to maximise available sunlight
- Ability to treat grey water on site
- Ability to function without requiring mains drainage connection

## Durability

- All mild steel components exposed externally must be hot dip galvanised
- All internal steel components and fixings to be wirox coated or zinc electroplated
- All structural materials to have a service life of over 60 years
- Roof cladding to have a service life of over 60 years
- Wall cladding minimum life of 25 years
- Windows and Doors life expectancy of 50 years for frames.

## Fire Safety

- Class O surface spread of flame over all walls and ceilings
- Class B limited combustibility for structural frame materials
- No toxic urethane or PIR foam insulation products used
- No structural or insulation material should support combustion easily and no toxic smoke should be produced if any part of the structure is subjected to an accidental house fire
- Non combustible ground floor with flame proofed base to provide 45 mins stability and integrity if a fire is lit below the trailer

# Few Steps to order your RightsiZED Units

Step

1

## Select Your Unit

1- One bedroom unit



2. Two bedroom unit



Step

2

## Select a Layout

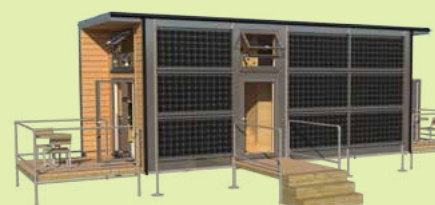
1. one double bedroom larger unit
2. two bed room, kitchenette
3. Two bedroom w/ kitchen
4. one double bedroom small unit.
5. One bedroom larger unit

Step

3

## Select Your Foundation

- 1- Trailer
2. Land raft
3. Jack up
4. Screw Pile
5. Flotation raft



Step

4

## Select appliances and fittings

1. Convection Oven
2. Microwave
3. Toaster
4. Induction Hob
5. Refrigerator
6. Freezer

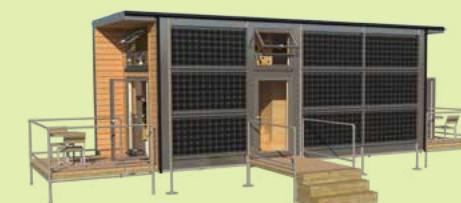
Step

5

## Unit is Delivered on Site



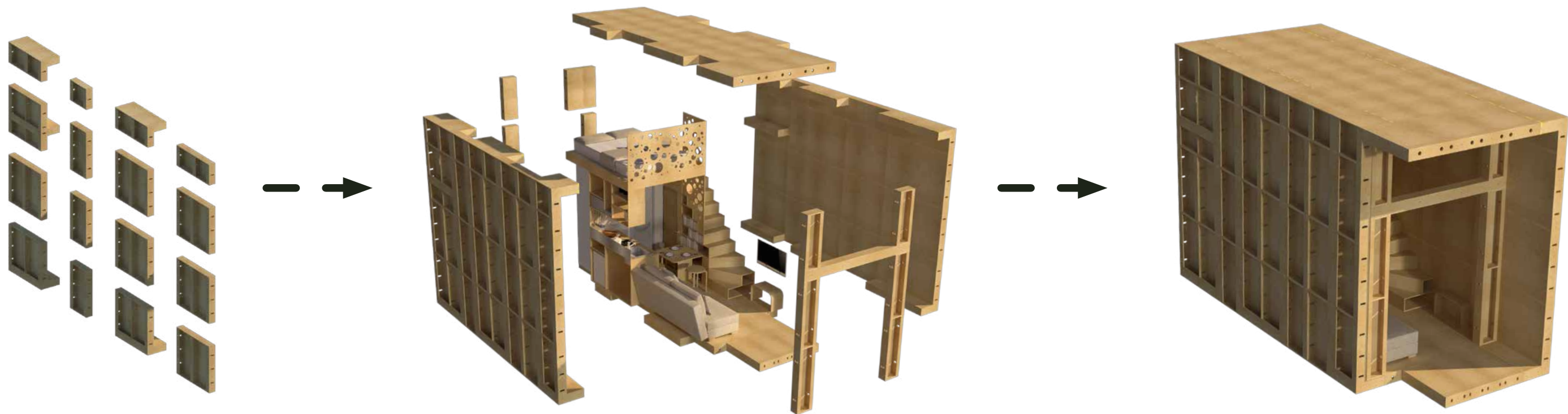
Unit is delivered on site on trailer



Unit is bolted down to selected foundation option



# RightsiZED units are constructed Off site and delivered to your site



Plywood Wall panels

Plywood Structure - exploded diagram with internal layout

Plywood wall panels bolted together for the main structure





# Step 1 : Select Your Unit

## 1 One Double Bedroom Unit

One Double Bedroom, one living room, shower room, kitchen with foldable dining table for 4-5, and one balcony.



## 2 Two Double Bedroom Unit

Two double bedrooms, one living room, shower room, kitchen with foldable dining table for 4-5, and two balconies.





# Step 2 : Select Your Layout

## Layout option 1

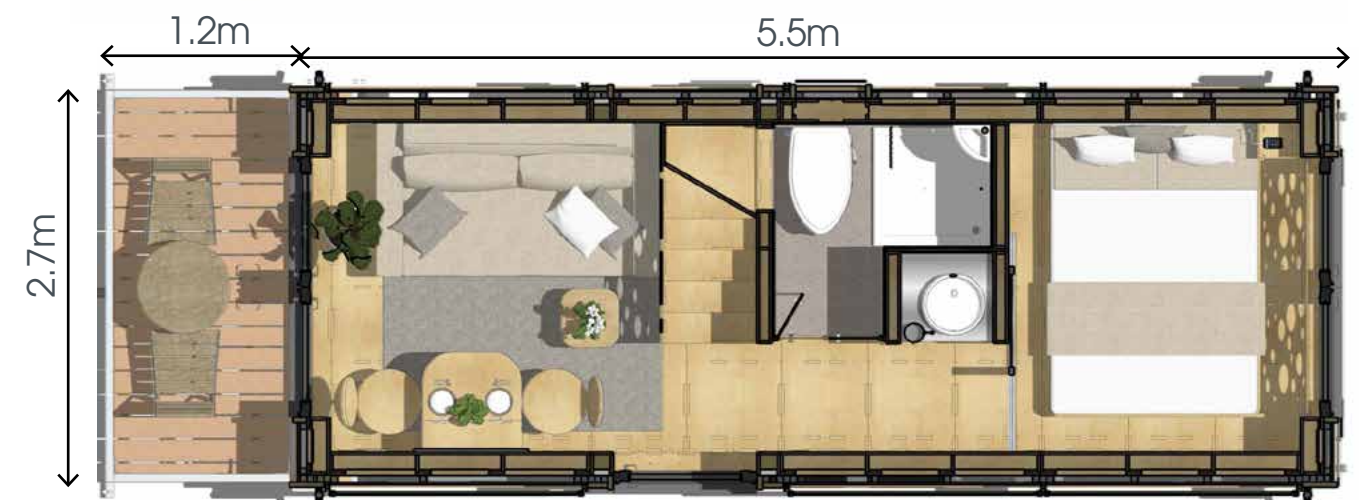
Unit Size - 5.5m long and 2.7 wide  
With 1.2m extended  
Balcony on either side

Lower Floor Area - 13.56m<sup>2</sup>  
Upper Floor Area - 7.55m<sup>2</sup>

Two Bedroom, one living room, shower room kitchenette,  
Living room with foldable dining table for two, and balcony.



- 1. Birch Plywood      £11500
- 2. Spruce Plywood    £8000



Lower Floor



Upper Floor



## Layout option 2

Unit Size - 5.5m long and 2.7 wide  
With 1.2m extended  
Balcony on either side

Lower Floor Area - 13.56m<sup>2</sup>  
Upper Floor Area - 7.55m<sup>2</sup>

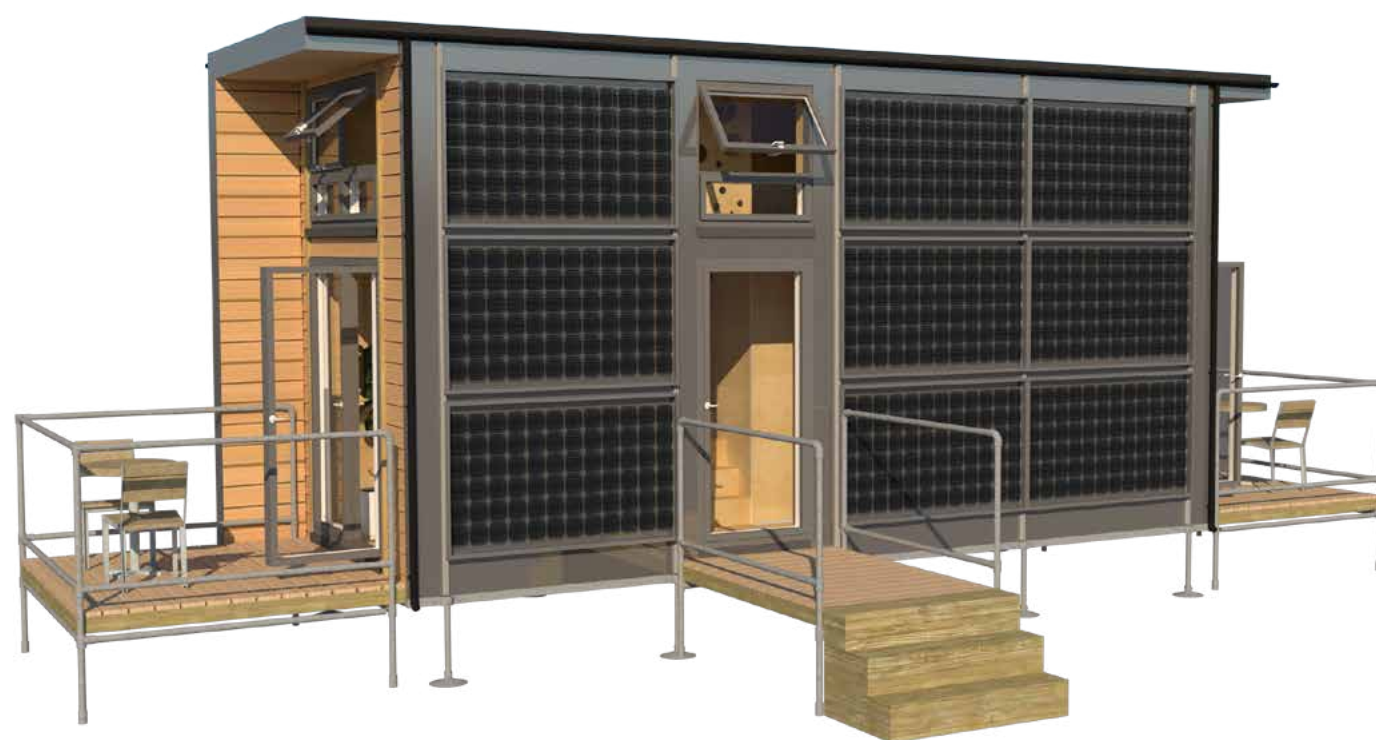
One Bedroom, one living room, shower room, kitchen with foldable dining table for 4-5, and two Balconies,.



Lower Floor



Upper Floor



1. Birch Plywood      £11500
2. Spruce Plywood    £8000

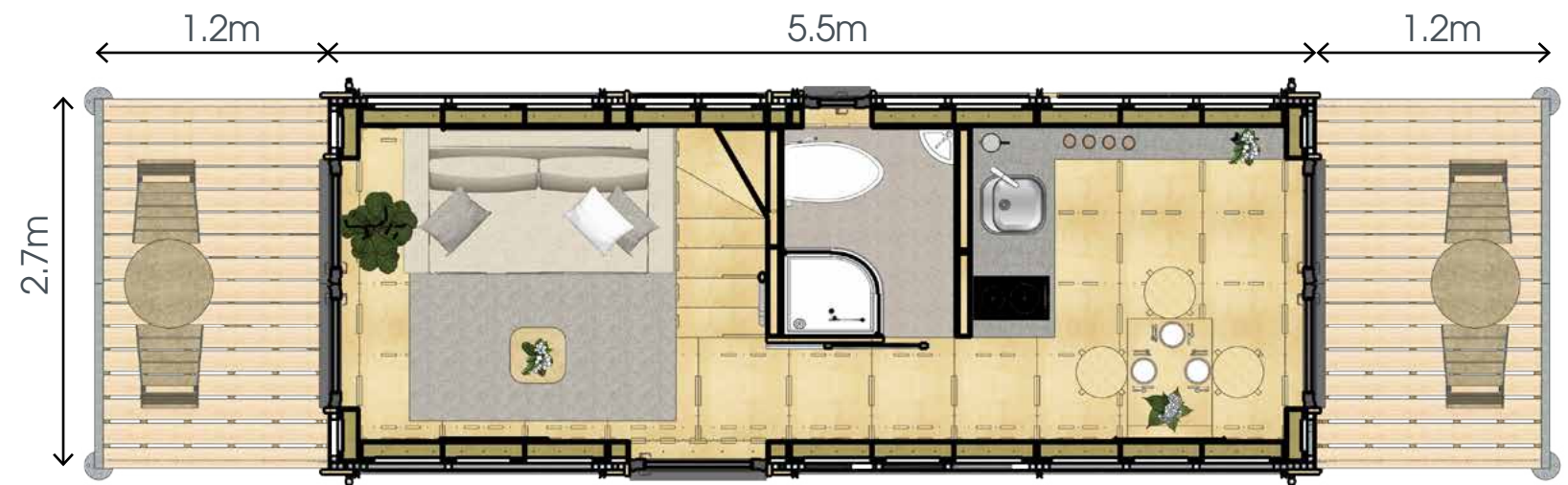


## Layout option 3

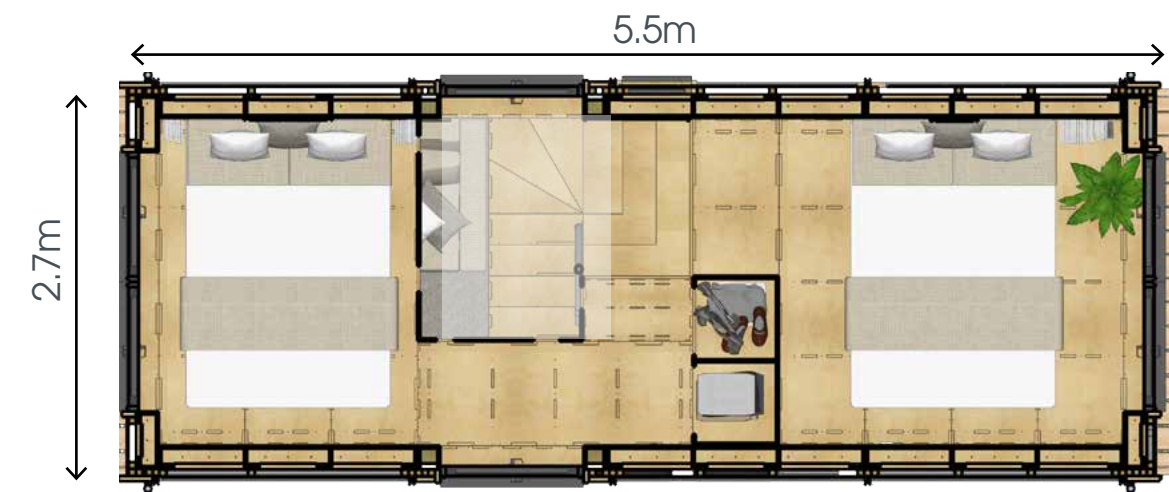
Unit Size - 5.5m long and 2.7 wide  
With 1.2m extended  
Balcony on either side

Lower Floor Area - 13.56m<sup>2</sup>  
Upper Floor Area - 11.5m<sup>2</sup>

Two Bedroom, one living room, shower room, kitchen with foldable dining table for 4-5, and two Balconies,.



Lower Floor



Upper Floor



- 1. Birch Plywood      £11500
- 2. Spruce Plywood    £8000



## Layout option 4

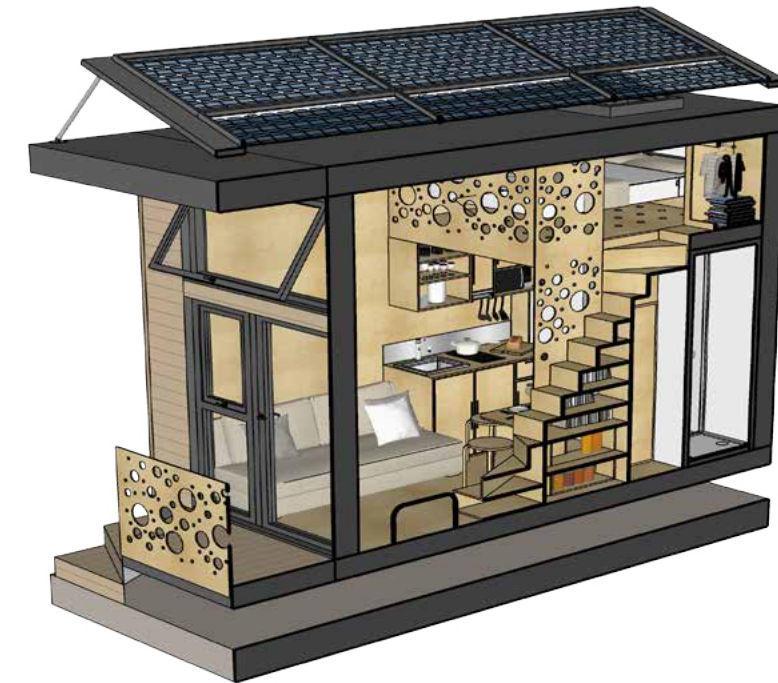
Unit Size - 5.1m long + 0.9m Balcony and 2.7 wide  
(Parking Bay Size)

Lower Floor Area - 9.40m<sup>2</sup>  
Upper Floor Area - 3.95m<sup>2</sup>

One Bedroom, one living room, shower room, kitchen with foldable dining table for 2-3, and a balcony.,.



- 1. Birch Plywood      £8500
- 2. Spruce Plywood    £6500



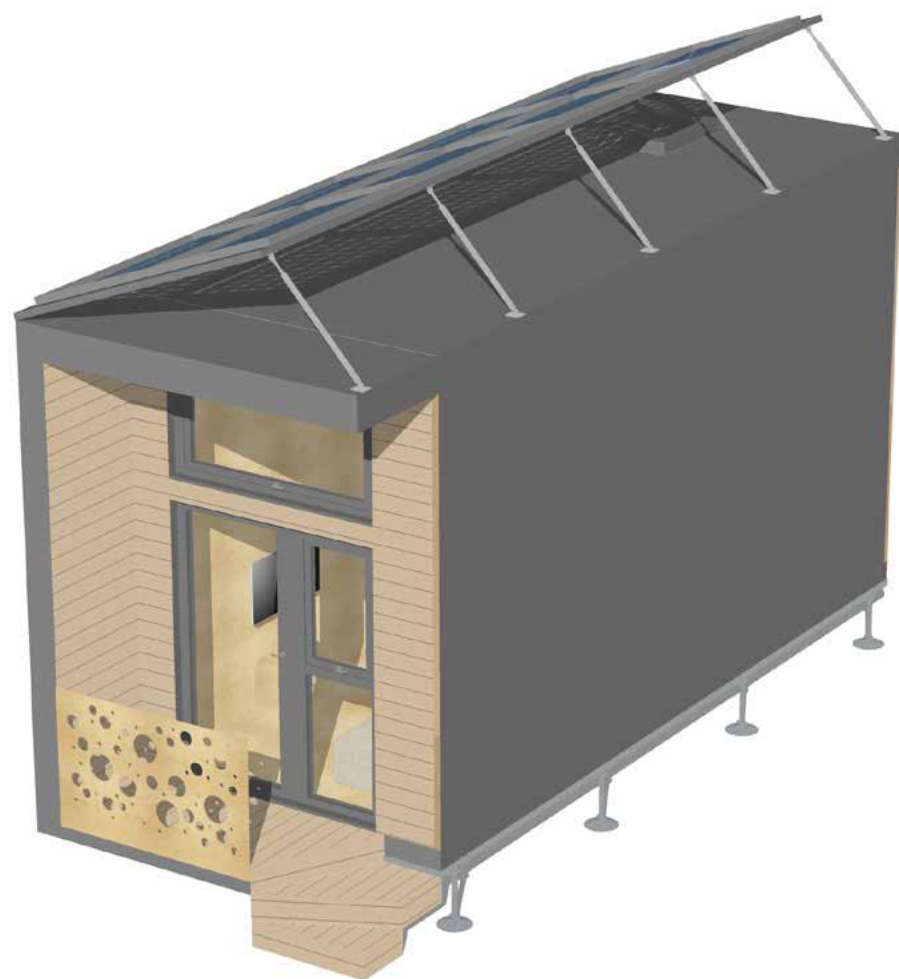


## Layout option 5

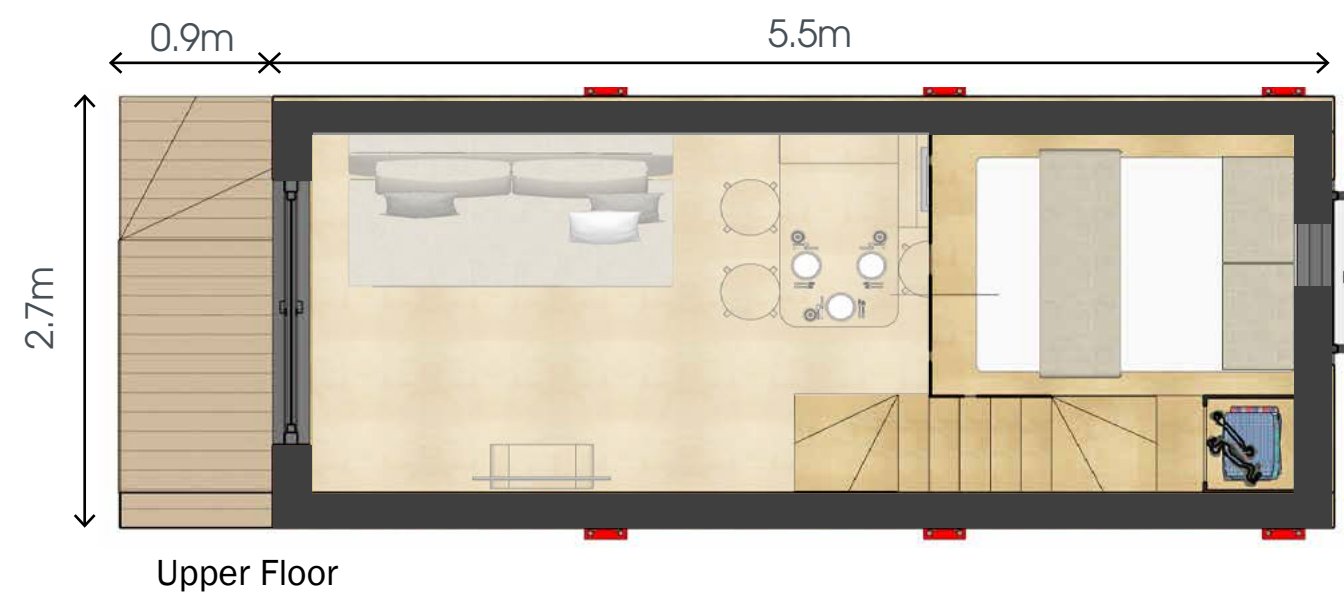
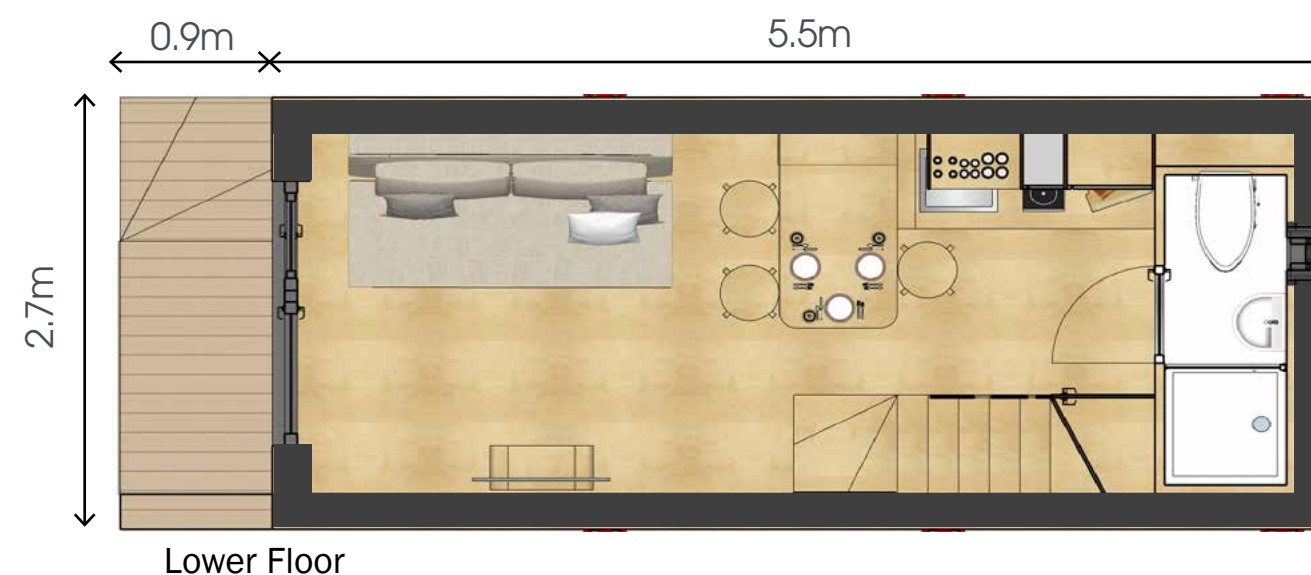
Unit Size - 5.5m long + 0.9m Balcony and 2.7 wide  
(Parking Bay Size)

Lower Floor Area - 14.30m<sup>2</sup>  
Upper Floor Area - 3.95m<sup>2</sup>

One Bedroom, one large living room, shower room, kitchen with foldable dining table for 2-3, and a balcony.



- 1. Birch Plywood      £11000
- 2. Spruce Plywood    £7500





# Step 3 : Select Your Foundation

Different foundation options allow flexibility on choice of sites - ranging from trailer mounted, blasted jack up chassis, ballasted gabion raft, galvanised steel flotation raft and screw piles.

The unique stressed skin panel design of the RightsiZED tiny house creates a torsionally stiff rectangular tube where all internal walls, floors and roof contribute to its structural rigidity.

1 Trailer £4250



2 Land Raft £5500



3 Jack up £3250



4 Screw Pile £4500



5 Flotation raft £6000





# Step 4 : Select appliances and fittings

## 1 Plywood Options:

	Birch Plywood	Spruce Plywood
Layout option 1	£10,500	£8000
Layout option 2	£10,500	£8000
Layout option 3	£11,500	£8000
Layout option 4	£8,500	£6,500
Layout option 5	£11,000	£7,500

Add -

\*Fireproofing by impregnating the plywood at the manufacturer - £1000

\*Fireproofing by paint with O class surface - £750

## 2 Bathroom with fittings Options:

	Birch Plywood	Spruce Plywood	Crystal Pods
Layout option 1	£4000	£3500	
Layout option 2	£4000	£3500	
Layout option 3	£4000	£3500	
Layout option 4	£4000	£3500	£3000
Layout option 5	£4000	£3500	£3000

## 3 Electrical Appliances:

Convection Oven	£250
Microwave	£55
Toaster	£30
Induction Hob	£230
Refrigerator	£750
Television	£250

## 4 Structure Finishings:

	Insulations	M&E
Layout option 1	£8000	£1750
Layout option 2	£8000	£1750
Layout option 3	£8000	£1750
Layout option 4	£6500	£1250
Layout option 5	£7250	£1500

## 5 External Finishings:

	Timber Cladding	Chestnut cladding	Zinc
Layout option 1	£2500	£3250	£1750
Layout option 2	£2500	£3250	£1750
Layout option 3	£2500	£3250	£1750
Layout option 4	£1750	£2500	£1250
Layout option 5	£2000	£2750	£1500



# Step 5 : RightsiZED unit is transported to the site

The unique stressed skin panel design of the RightsiZED tiny house creates a torsionally stiff rectangular tube where all internal walls, floors and roof contribute to its structural rigidity.

This rigidity means that the tiny house does not need linear strip foundations like a conventional build or the support of a specially made rigid steel tiny house trailer base. The stressed skin plywood tube structure does the same job as a steel trailer base.

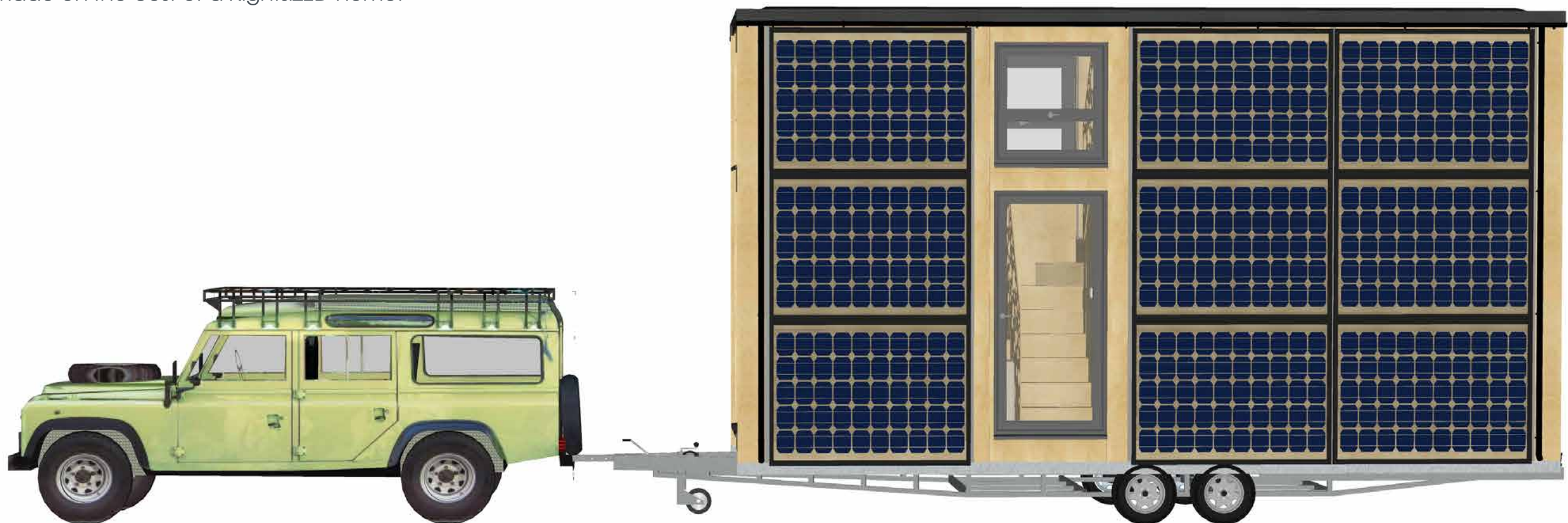
RightsiZED have replaced the expensive trailer base with a perimeter structural aluminium angle with special cast steel tube clamps bolted to it. Four tube clamps are required on each long elevation. When these legs ( 8 in total ) are correctly deployed in the chosen final location – the delivery trailer can be withdrawn and re used on future deliveries. This means that expensive specially made tiny house trailer are no longer required, and a substantial saving can be made on the cost of a RightsiZED home.

All floor plan layouts have jack up scaffold pole legs as shown on foundation option 3.

The costings should include for this option as the jack up legs are fitted to the aluminium base angle on all production models of any layout.

The trailer has a simple angle bracket on all 4 corners welded on to bolt to the aluminium base angle on the tiny house.

For transit the leg tubes are pushed upwards to give ground clearance.





# RightsiZED unit is transported to the site

When the tiny house has reached its final location, the trailer chassis is lifted with four pump up garage jacks and placed on wooden blocks with the wheels 50 mm clear of the ground surface.

The scaffold tube legs are then allowed to touch the ground and the feet flanges are fitted that allow secure bolting down to foundation concrete pads, slabs or sleepers.

The galv steel clamp castings on the perimeter aluminium base angle are locked off at the correct torque, and the weight of the tiny house can now be transferred to the scaffold tube legs.

The garage jacks are carefully lowered and the wooden blocks are removed.

The four angle bracket locations holding the tiny house to the trailer are then slackened off and decoupled, and any bolts reeved and safely stored for re – use.

The trailer can now be gently pulled away by the four wheel drive delivery vehicle for re – use on the next delivery.



Unit is delivered on site on trailer



Unit are bolted down to selected foundation option



# Available in different layout and stacking options

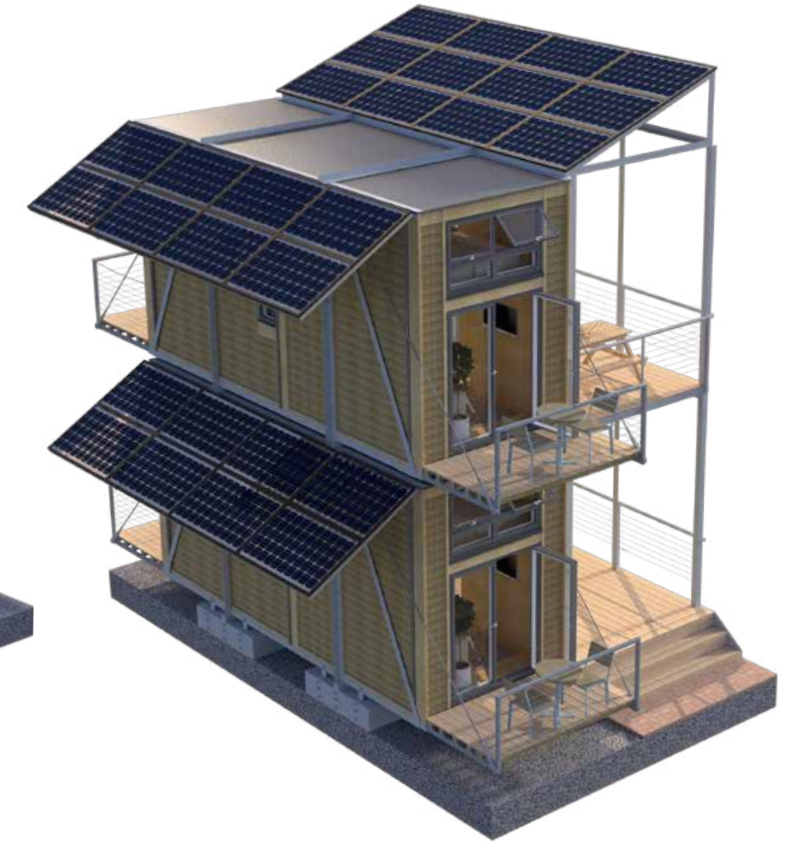
1

Single  
RightsiZED unit



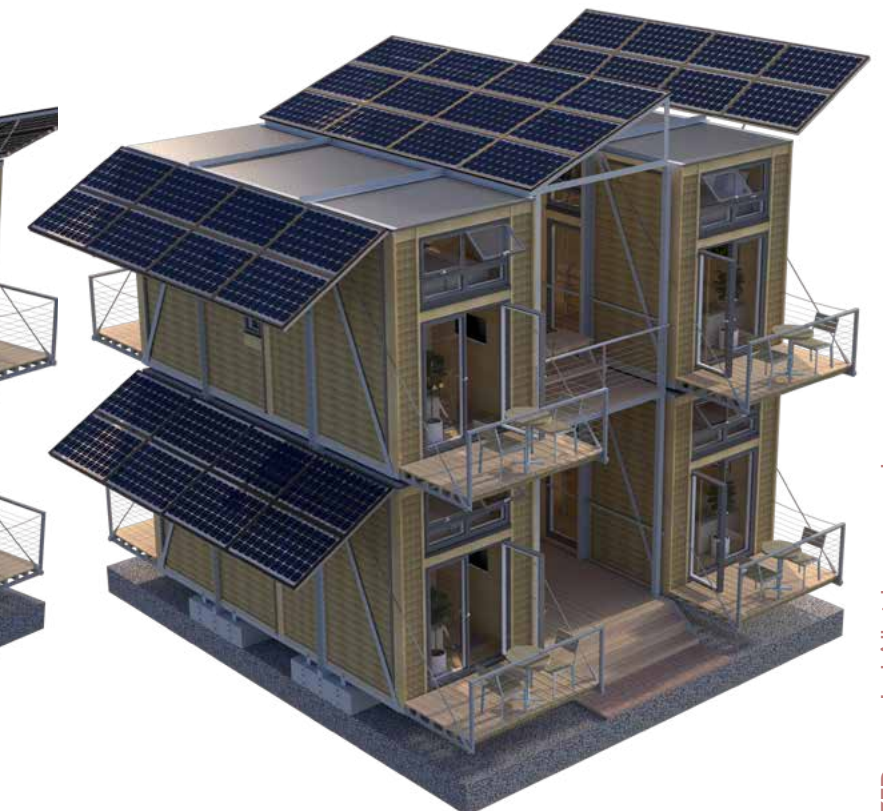
2

Stacked  
2 no. units



3

Stacked  
4 no. units





# 1. 2 Off site Construction- RightsiZED Units

## 1.2 Off site construction- RightsiZED unit

The FSC ply from sustainable forestry is impregnated with fire retardant and cut into panels. These can be flat packed on a trailer and sent out as a kit of parts for local assembly, or delivered to our Barn.

Laid out for dry assembly with external grade galvanised torx head screws and a hand held electric screwdriver.

The ply is cut very accurately and **interlocks to create a very strong stressed skin panel**. The strength is provided by the interlocking action of each ply plate, and the screws simply hold the plates in place.

This is far **stronger than a conventional timber frame** and can take high levels of impact resistance when used as a wall panel.

There is almost no measurable deflection when used as floor panels – even with three heavy people standing on one panel.



## Structural Assembly

The hot dip galvanised trailer is heavy duty and will last many times longer than a cheaper painted finish.

The trailer bed is lined with rot and vermin proof galv steel sheet supporting non combustible rockfibre insulation.

Prefabricated plywood floor panels are screwed to treated softwood battens ( attached to the trailer chassis with galv U bolts )



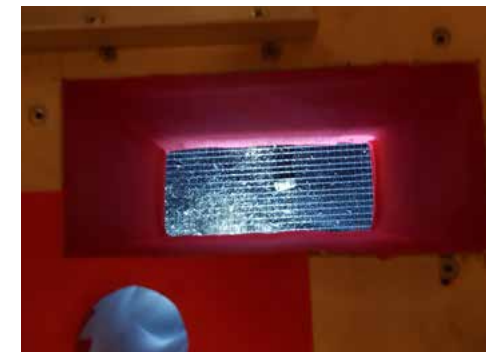
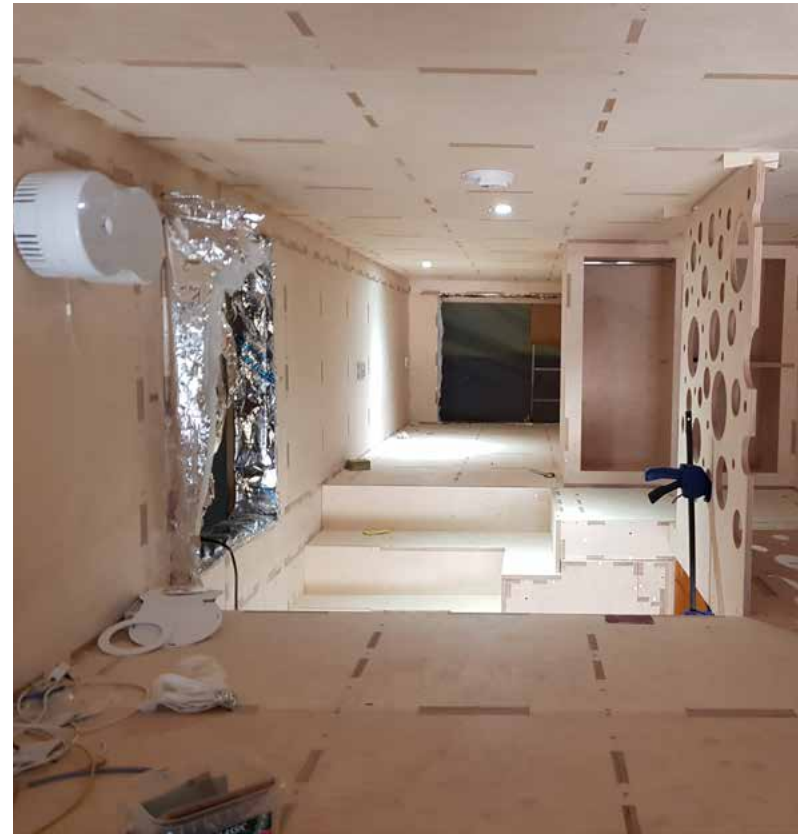


# Safety and Security

Multiple layers of Flameproofed non combustible multi-foil insulation provides superb insulation with minimal weight penalty.

The entire superstructure is then wrapped in another vapour permeable multi foil airtightness layer secured by battens – ready to take the weather board cladding.

The outer skin of foil is fully taped to avoid water penetration and returned on all window and door openings. After the aluminium frames are fixed – a perimeter silicon seal ensures no air leakage.



## 1.2 Off site construction- RightsiZED unit

# External Cladding

The powder coated aluminium windows are thermally broken double glazed low E with robust hinges and low maintenance.

With extruded aluminium cills

The cladding is specially grown chestnut weather boarding sourced from local FSC certified woodland and will last decades if oiled every few years.

The roof is standing seam zinc sheet with a 60 year life.

The hot dip galvanised trailer has the same life expectancy as a structural steel frame – and the high quality of the house construction will give a similar durability to any new permanent home

The Homes are available with jack up legs with an option for towing if required.





# 1.3 Interiors- RightsiZED Units

## Kitchen



The kitchen has a microwave, two ceramic hobs, an A++ fridge, solid heat proofed laminate worktop, and storage space



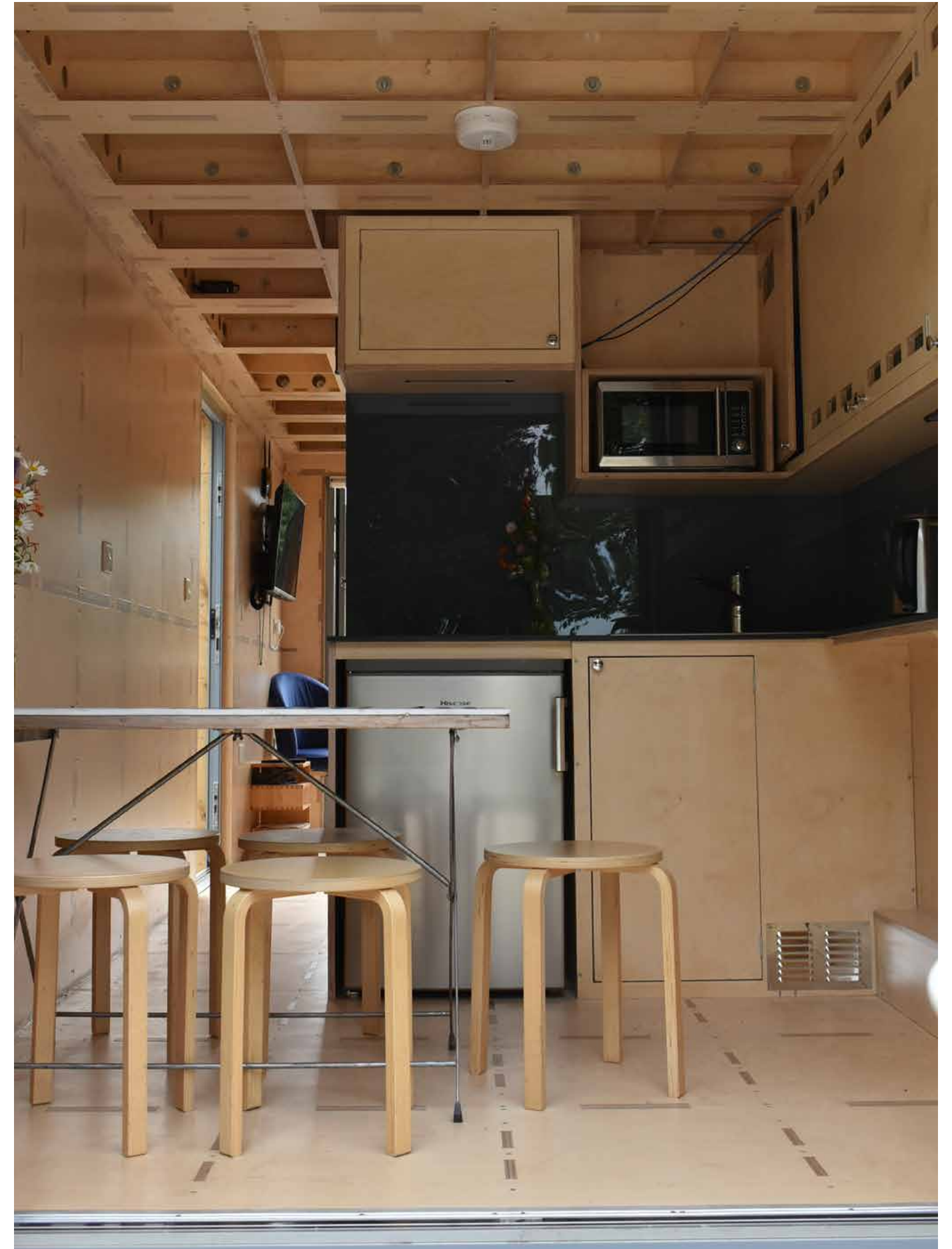


## Kitchen

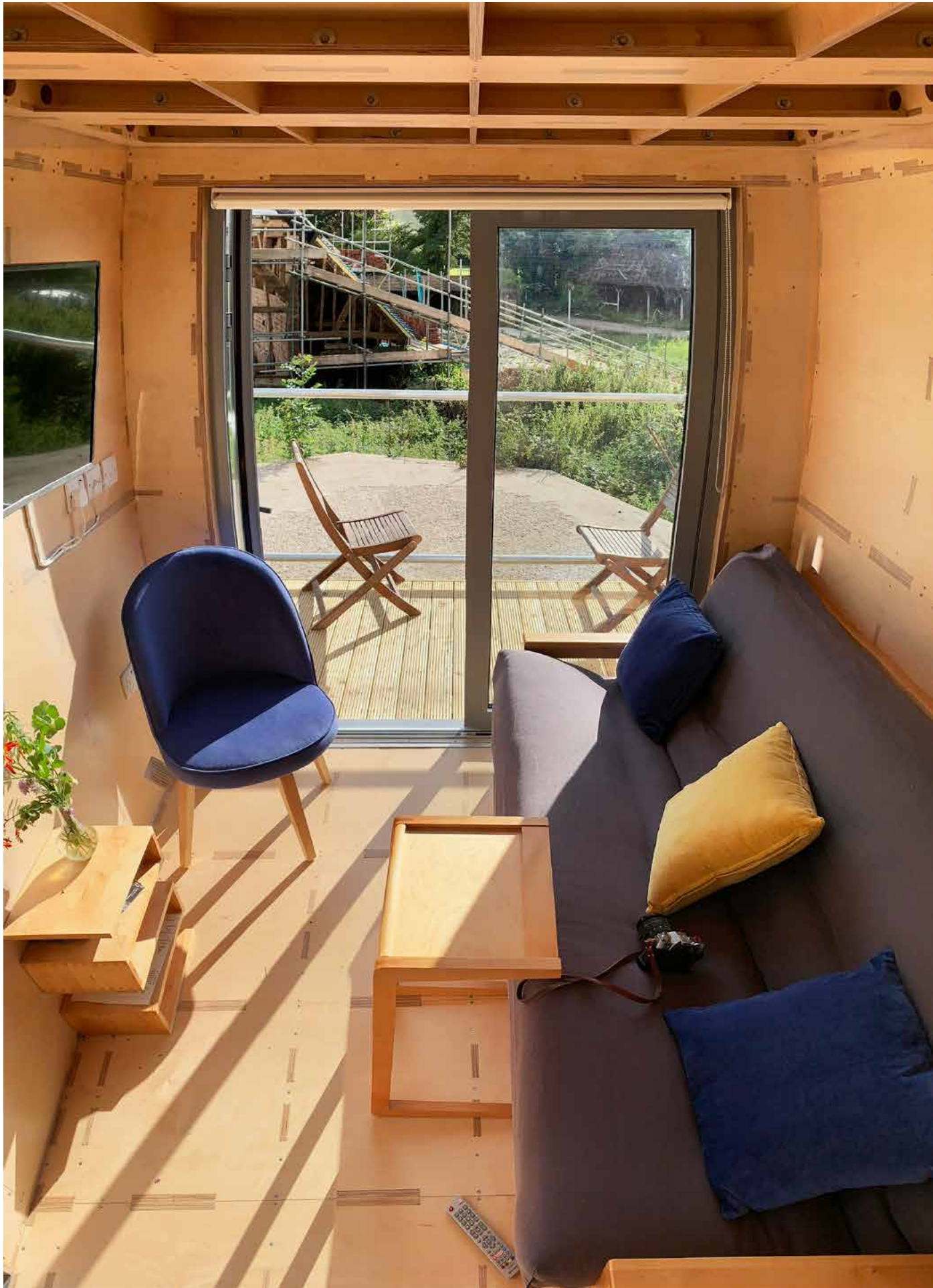
## 1.3 Interiors



The kitchen seats 4 with place for a guest.











Large patio doors open out to an external deck, large enough to seat six diners outside and a BBQ.





## Bedroom

The bedrooms are approx. 1m high on the towing version but can be increased in height on permanent installations

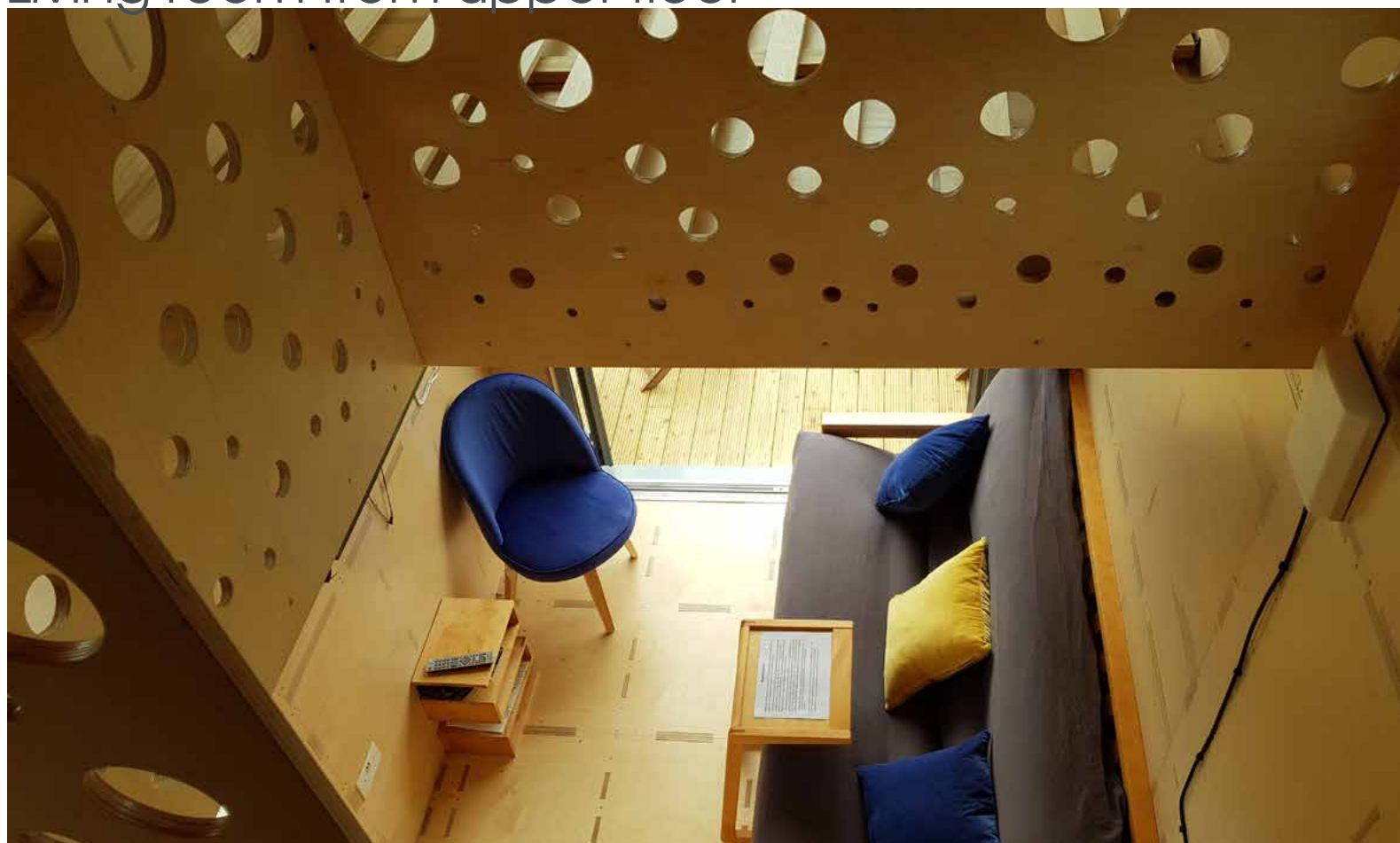
Storage space with a hanging rail is included, and drawers are placed under the master bed



## Shower room



## Living room from upper floor





## Solar Panels and Batteries

Solar panels placed vertically generate more electricity in winter and are combined with LIPO4 battery storage to give off grid capability if needed.

An additional parallel circuit allows grid connection hook up for more permanently occupied sites



## Balustrade

