

Passivhaus on a shoestring:

A three bedroom Passivhaus with a generous open-plan living/kitchen/diner which can be built for under £45,000. The width of the house makes the most of its garden and available winter solar gain, whilst carefully controlled openings create variety within a relatively compact form.

The simple approach taken to construction means the house could be easily built with basic joinery skills either on or off-site. It also makes it easy to adapt to the individual self-builder's needs or the regional context it sits within. The orientation could even be changed to fit a narrower plot or the local vernacular.

The home can easily be altered to suit the changing needs of its occupants. The downstairs WC could be extended to create a shower-room creating a usable dwelling over one level or the initially compact form could be extended to suit the site or individual needs.

It's important to understand that a passivhaus solution is a project and site specific one and any changes may alter the calculated energy performance.

The design has been modelled to meet the most stringent of energy standards. However, renewable technology could be easily retrofitted or additional insulation added if required.

cladding: a combination of fibre cement slates and vertical, untreated larch boarding, fixed to horizontal treated Softwood battens and vertical counter battens for cavity drainage.

The rainscreen approach means that there is scope for alternative cladding materials to create an appropriate appearance for a specific context.

windows: high performance triple glazed with insulated frames.

reveal insulation overlap frames by 35mm to avoid perimeter cold bridging

Total project costs:

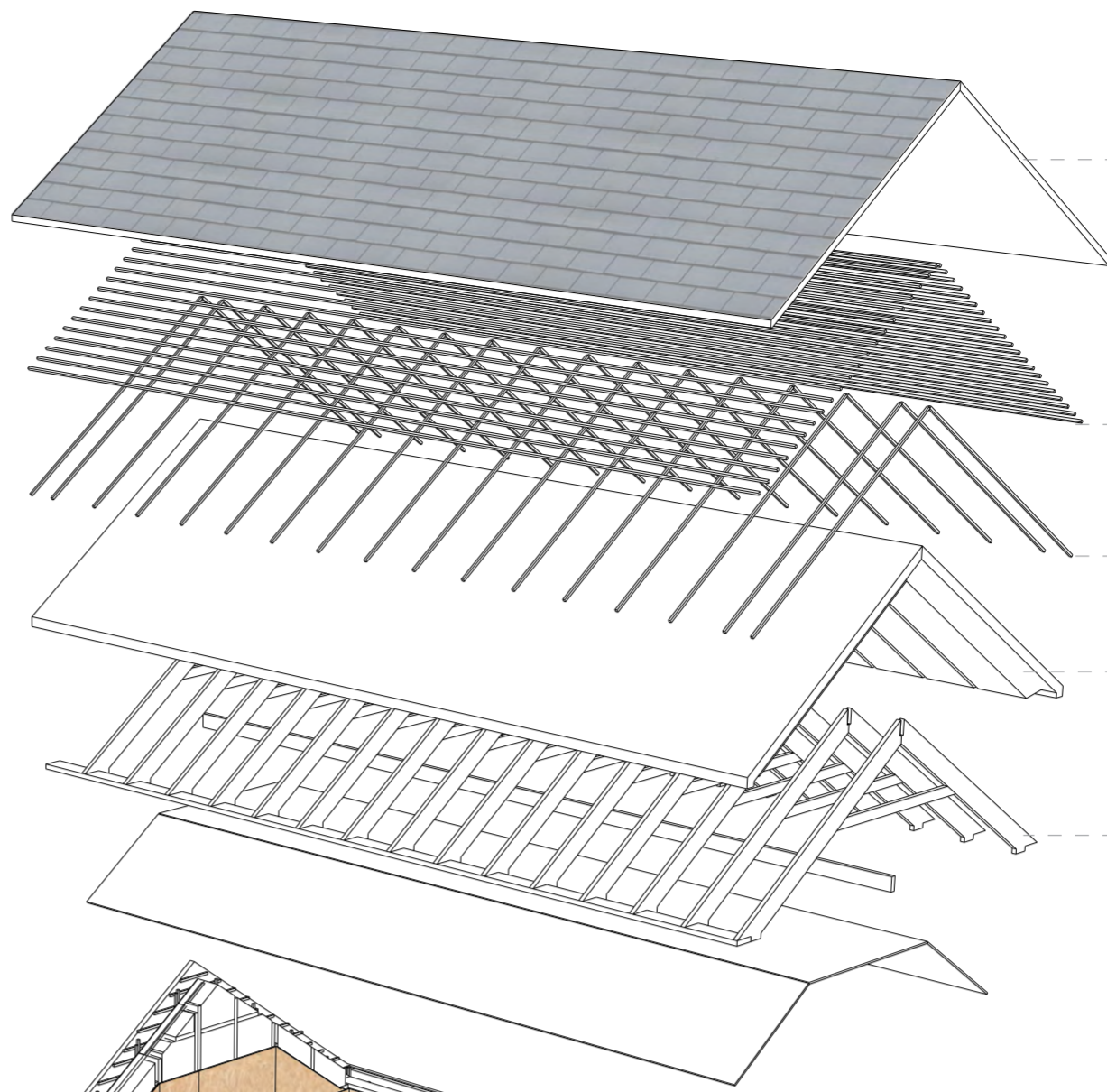
| | |
|---------------------------------|---------------------|
| Total materials costs: | £41,876.83 |
| Total Labour costs: | £1,450 |
| Total: | £43,326.83 |
| Total GIFA: | 70.14m ² |
| Total cost per m ² : | £617.72 |

Off[on]site wall panels: the external walls of the dwelling are made of low-tech prefabricated panels constructed on or off site.

There are 52 panels in the project with 11 different types. The panels are designed to a standard 8'x4' sheet size to minimise wastage.

OSB forms the airtightness line, internal finish and tie the structure together.

The panels achieve an excellent u-value of 0.109 W/m²K and can be constructed with basic joinery skills.



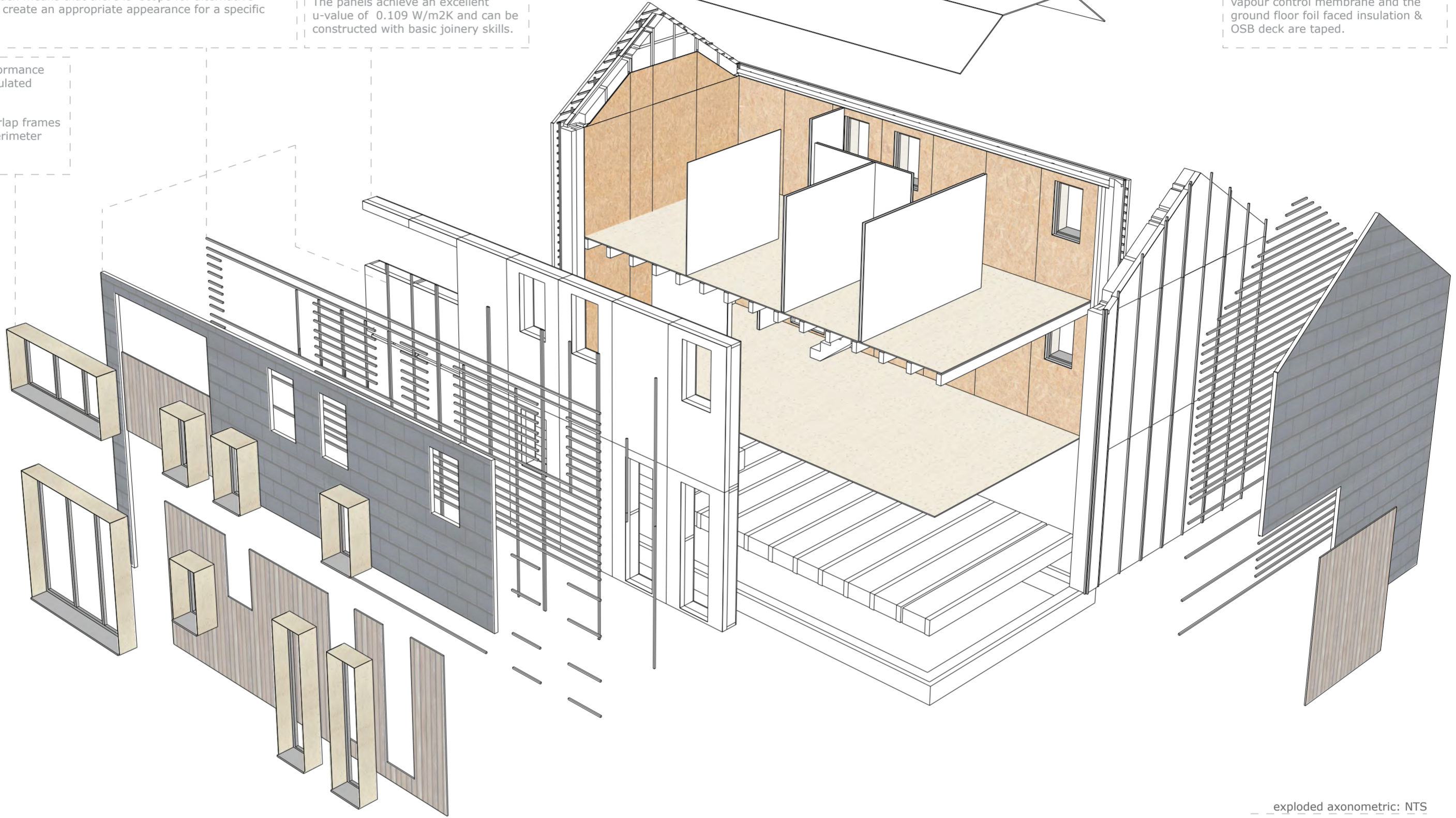
roof: the roof is clad in fibre cement slate tiles. To achieve a more enjoyable volume, the trusses have a mid-height tie to allow a sloping soffit.

The roof uses the same total construction as the walls with air-tightness provided by an intelligent vapour control membrane. This is over-clad with an OSB soffit to match the internal surface of the external walls.

air-tightness: as the OSB 3 board is the surface finish as well as the air-tightness layer taping vertical joints is not an option. Instead these will be mechanically sealed with OSB loose tongues sealed into routed slots in the wall panels.

Horizontal joints are masked by floor and roof constructions so can be sealed with proprietary air-tightness tapes.

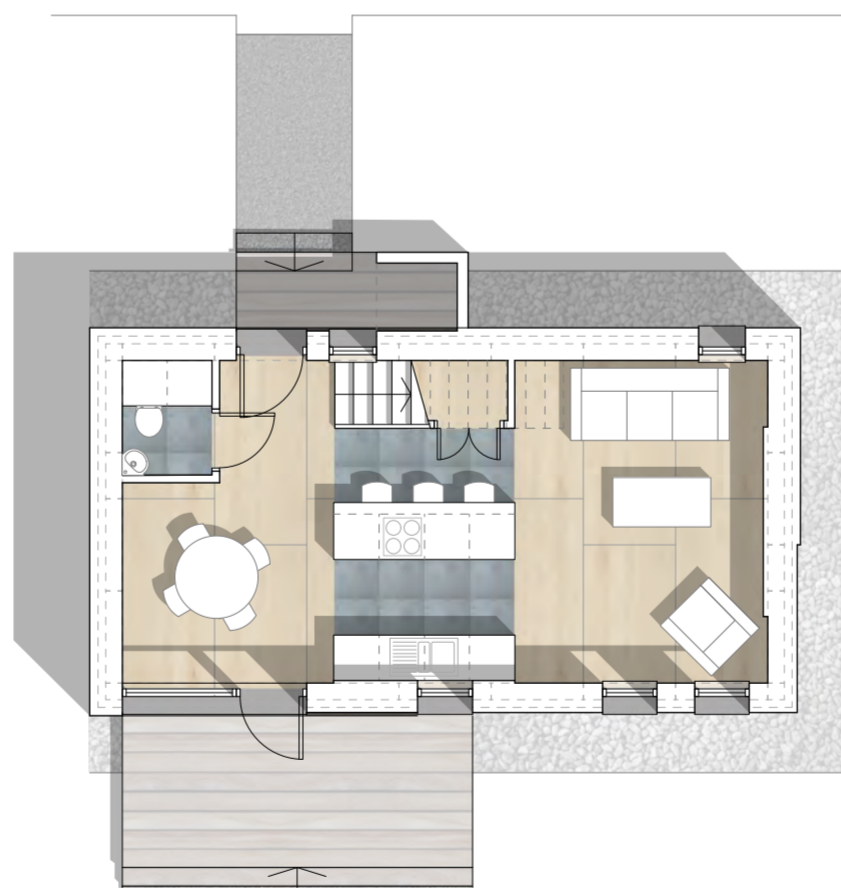
The roof is sealed with an intelligent vapour control membrane and the ground floor foil faced insulation & OSB deck are taped.



exploded axonometric: NTS



rear external view: NTS



ground floor plan: 1:100



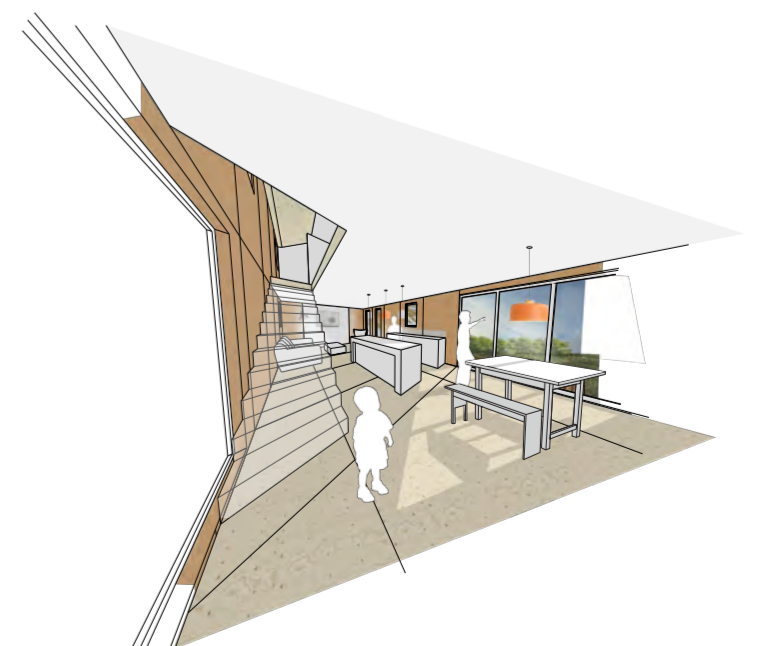
first floor plan: 1:100



north [front] elevation: 1:100



south [rear] elevation: 1:100



ground floor internal view: NTS

| Works Package | Construction Element | Materials | Labour | Total |
|------------------|--|--------------------|-------------------|--------------------|
| Works Package 1 | Set up, Clearance, Demolitions.... | £ - | £ - | £ - |
| Works Package 2 | Foundations (<i>up to DPC</i>) | £ 1,580.65 | £ - | £ 1,580.65 |
| Works Package 3 | Ground Floor Slab or Suspended Floor | £ 1,694.39 | £ - | £ 1,694.39 |
| Works Package 4 | Drainage & Service Trenchwork | £ 763.00 | £ - | £ 763.00 |
| Works Package 5 | Specialist Building System (<i>eg timber frame, SIPs, etc if applicable</i>) | £ 4,062.35 | £ - | £ 4,062.35 |
| Works Package 6 | External & Internal Walls | £ 3,973.45 | £ - | £ 3,973.45 |
| Works Package 7 | Intermediate Floor Zone (<i>if applicable</i>) | £ 999.84 | £ - | £ 999.84 |
| Works Package 8 | Fireplace & Chimney (<i>if applicable</i>) | £ - | £ - | £ - |
| Works Package 9 | Roof Structure, Insulation & Covering | £ 3,126.93 | £ - | £ 3,126.93 |
| Works Package 10 | Joinery (<i>Windows, doors, stairs, skirtings...</i>) | £ 12,260.54 | £ - | £ 12,260.54 |
| Works Package 11 | Specialist Products (<i>eg: Eco products...</i>) | £ 4,300.00 | £ 500.00 | £ 4,800.00 |
| Works Package 12 | Electrical Installation | £ 1,287.84 | £ 150.00 | £ 1,437.84 |
| Works Package 13 | Plumbing Installation | £ 1,665.00 | £ - | £ 1,665.00 |
| Works Package 14 | Heating Installation | £ 1,200.00 | £ 800.00 | £ 2,000.00 |
| Works Package 15 | Plastering (<i>or dry-lining</i>) | £ 123.84 | £ - | £ 123.84 |
| Works Package 16 | Kitchen and Utility Units (<i>+ appliances</i>) | £ 3,000.00 | £ - | £ 3,000.00 |
| Works Package 17 | Decorations & Wall Ceramics | £ 1,174.00 | £ - | £ 1,174.00 |
| Works Package 18 | Floor Finishes | £ 665.00 | £ - | £ 665.00 |
| | TOTAL | £ 41,876.83 | £ 1,450.00 | £ 43,326.83 |

package 2: foundations

To minimise excavation, the building is supported off two strip footings along the two long external walls of the building. These are then built up as walls in lightweight blockwork up to DPC level where they support a treated softwood ringbeam.

Total cost: Materials: £1,580.65 | Labour: £0.00

| Package 1 Site Clearance - assumed clear | | | | |
|--|-----------------------------------|---------|-----------------------|------------------------|
| Package 2 Foundations | | | | |
| Plinth | Thermalite Turbo block plinth | m rate | quantity | cost |
| | | £10.44 | 18 | £187.96 |
| | DPC (cost for 30m roll 225mm DPC) | | | £7.89 |
| Plinth Total | | | | £195.85 |
| Concrete | Concrete m3 cost | m3 rate | quantity | cost |
| | cement (kg) | £0.15 | 320 | £49.02 |
| | sand (kg) | £0.05 | 600 | £28.24 |
| | aggregate (kg) | £0.05 | 1200 | £60.00 |
| | total m3 rate | | | £137.26 |
| total concrete volume (m3) | | 8.1 | Concrete Total | £1,111.80 |
| Plant | mini-digger hire 1 week | | Plant Total | £273.00 |
| | | | | Total £1,580.65 |

package 3: suspended ground floor

The suspended timber ground floor achieves a very thermally efficient u-value of 0.107W/m2K with Rockwool insulation between 200mm joists and a 100mm PIR insulation over to avoid cold bridging. The joints in the intermediate OSB deck and top of the PIR are taped to give excellent air-tightness

Total cost: Materials: £1,694.39 | Labour: £0.00

| Package 3 Suspended Ground Floor | | | | | |
|----------------------------------|-------------------------------------|--------------|----------|------------------------|------------------|
| floor | Birch Ply flooring (air-tight line) | m or m2 rate | quantity | cost | |
| | | £13.89 | 1 | £13.89 | |
| | 100mm Xtratherm insulation | £11.10 | 1 | £11.10 | |
| | OSB 3 deck | £7.18 | 1 | £7.18 | |
| | 200mm timber joists | £3.30 | 2 | £6.60 | |
| | screws | £0.02 | 50 | £1.00 | |
| | Rockwool flexi insulation | £6.05 | 0.9 | £5.45 | |
| | breather membrane | £1.25 | 1 | £1.25 | |
| | total m2 rate | | | £46.47 | |
| | floor area (m2) | | 36.466 | total cost | £1,694.39 |
| | | | | Total £1,694.39 | |

package 4: drainage and service trenchwork

An allowance for 10m of combined drainage to the property boundary plus all connections to above ground systems.

Total cost: Materials: £763.00 | Labour: £0.00

| Package 4 Drainage and Service Trenchwork | | |
|---|-------------------------------------|----------------------|
| Plant | mini-digger hire 1 week | £273.00 |
| Drainage | Pipes, couplings, bends and hoppers | £190.00 |
| | Inspection chambers x 2 | £200.00 |
| | Gravel bedding | £100.00 |
| | | Total £763.00 |

package 5: specialist building system

The external walls of the dwelling are made of low-tech prefabricated panels constructed on or off site. These panels are 200mm deep with an OSB racking board. To minimise the layers to the system, the OSB 3 racking board also forms the air-tight line and the internal finish to the external walls.

There are 52 panels in the project with 11 different types. The panels are all built around a standard sheet size (1220 x 2440mm) to minimise wastage.

To provide the air-tight continuity, a mechanical loose tongue system is employed at vertical panel joints to avoid visible tapes or pattresses.

The horizontal joints are masked by the different floor and roof constructions, so can be taped with propretiry air-tightness tapes.

The wall construction (including an additional layer of PIR insulation on the outside covered in package 6) achieves an excellent u-value of 0.109 W/m2K.

Total cost: Materials: £4,062.39 | Labour: £0.00

The combination of excellent u-values, air-tightness and acreful use of orientation and passive solar gain means that the proposal achieves the passivhaus standard at pre-planning stage with a specific space heating demand of 14 kWh/m2.a:

Passive House Verification

Photo or Drawing

| | | | |
|----------------------------------|---|-------|--|
| Building: | Self build on a shoe string | | |
| Location and Climate: | Birmingham UK | Datal | |
| Street: | | | |
| Postcode/City: | | | |
| Country: | | | |
| Building Type: | Detached house | | |
| Home Owner(s) / Client(s): | Self build on a shoe string competition | | |
| Street: | | | |
| Postcode/City: | | | |
| Architect: | Paul Testa Architecture | | |
| Street: | 29 Footgate Close | | |
| Postcode/City: | B35 0JA | | |
| Mechanical System: | | | |
| Street: | | | |
| Postcode/City: | | | |
| Year of Construction: | | | |
| Number of Dwelling Units: | 1 | | |
| Enclosed Volume V _i : | 240.0 m ³ | | |
| Number of Occupants: | 4.0 | | |
| Interior Temperature: | 20.0 °C | | |
| Internal Heat Gains: | 2.1 W/m ² | | |

| Specific Demands with Reference to the Treated Floor Area | | | | |
|--|----------------------------|-----------------------------|------------|--|
| Treated Floor Area: | 66.4 m ² | | | |
| Applied: | Annual method | PH Certificate: | Fulfilled? | |
| Specific Space Heating Demand: | 14 kWh/(m ² .a) | 15 kWh/(m ² .a) | Yes | |
| Heating Load: | 10 W/m ² | 10 W/m ² | Yes | |
| Pressurization Test Result: | 0.6 h ⁻¹ | 0.6 h ⁻¹ | Yes | |
| Specific Primary Energy Demand (DHW, Heating, Cooling, Auxiliary and Household Electricity): | kWh/(m ² .a) | 120 kWh/(m ² .a) | | |
| Specific Primary Energy Reduction through Solar Electricity: | kWh/(m ² .a) | | | |
| Frequency of Overheating: | 0 % | over 25 °C | | |
| Specific Useful Cooling Energy Demand: | kWh/(m ² .a) | 15 kWh/(m ² .a) | | |
| Cooling Load: | 2 W/m ² | | | |

| Package 5 Specialist Building System | | | | |
|--|------------------------------|--------------|------------------------|---------|
| Wall Panels | Panel type | m or m2 rate | quantity | cost |
| | 1 | | | |
| | OSB 3 board (air-tight line) | £21.36 | 1 | £21.36 |
| | Rockwool flexi insulation | £6.05 | 2.285 | £13.82 |
| | 200mm timber studs | £3.30 | 14.64 | £48.31 |
| | total panel cost | | | £83.50 |
| | no. of panels | | | 24 |
| | total cost £2,003.91 | | | |
| | 2 | | | |
| | OSB 3 board (air-tight line) | £21.36 | 1 | £21.36 |
| | Rockwool flexi insulation | £6.05 | 1.638 | £9.91 |
| 200mm timber studs | £3.30 | 14.64 | £48.31 | |
| total panel cost | | | £79.58 | |
| no. of panels | | | 8 | |
| total cost £636.66 | | | | |
| 3 | | | | |
| OSB 3 board (air-tight line) | £21.36 | 1 | £21.36 | |
| Rockwool flexi insulation | £6.05 | 1.429 | £8.65 | |
| 200mm timber studs | £3.30 | 12.55 | £41.42 | |
| total panel cost | | | £71.42 | |
| no. of panels | | | 1 | |
| total cost £71.42 | | | | |
| 4 | | | | |
| OSB 3 board (air-tight line) | £21.36 | 1 | £21.36 | |
| Rockwool flexi insulation | £6.05 | 1.221 | £7.39 | |
| 200mm timber studs | £3.30 | 10.46 | £34.52 | |
| total panel cost | | | £63.27 | |
| no. of panels | | | 1 | |
| total cost £63.27 | | | | |
| 5 | | | | |
| OSB 3 board (air-tight line) | £21.36 | 1 | £21.36 | |
| Rockwool flexi insulation | £6.05 | 0.958 | £5.80 | |
| 200mm timber studs | £3.30 | 13.4 | £44.22 | |
| total panel cost | | | £71.38 | |
| no. of panels | | | 3 | |
| total cost £214.13 | | | | |
| 6 | | | | |
| OSB 3 board (air-tight line) | £21.36 | 1 | £21.36 | |
| Rockwool flexi insulation | £6.05 | 0.53 | £3.21 | |
| 200mm timber studs | £3.30 | 8.32 | £27.46 | |
| total panel cost | | | £52.02 | |
| no. of panels | | | 1 | |
| total cost £52.02 | | | | |
| 7 | | | | |
| OSB 3 board (air-tight line) | £21.36 | 0.25 | £5.34 | |
| Rockwool flexi insulation | £6.05 | 0.102 | £0.62 | |
| 200mm timber studs | £3.30 | 3.24 | £10.69 | |
| total panel cost | | | £16.65 | |
| no. of panels | | | 2 | |
| total cost £33.30 | | | | |
| 8 | | | | |
| OSB 3 board (air-tight line) | £21.36 | 0.5 | £10.68 | |
| Rockwool flexi insulation | £6.05 | 1.142 | £6.91 | |
| 200mm timber studs | £3.30 | 7.32 | £24.16 | |
| total panel cost | | | £41.75 | |
| no. of panels | | | 4 | |
| total cost £166.98 | | | | |
| 9 | | | | |
| OSB 3 board (air-tight line) | £21.36 | 0.25 | £5.34 | |
| Rockwool flexi insulation | £6.05 | 0.342 | £2.07 | |
| 200mm timber studs | £3.30 | 4.02 | £13.27 | |
| total panel cost | | | £20.68 | |
| no. of panels | | | 4 | |
| total cost £82.70 | | | | |
| 10 | | | | |
| OSB 3 board (air-tight line) | £21.36 | 0.25 | £5.34 | |
| Rockwool flexi insulation | £6.05 | 0.462 | £2.80 | |
| 200mm timber studs | £3.30 | 3.5 | £11.55 | |
| total panel cost | | | £19.69 | |
| no. of panels | | | 2 | |
| total cost £39.37 | | | | |
| 11 | | | | |
| OSB 3 board (air-tight line) | £21.36 | 0.5 | £10.68 | |
| Rockwool flexi insulation | £6.05 | 1.099 | £6.65 | |
| 200mm timber studs | £3.30 | 8.78 | £28.97 | |
| total panel cost | | | £46.30 | |
| no. of panels | | | 2 | |
| total cost £92.61 | | | | |
| Total cost of wall panels £3,456.36 | | | | |
| frame sundries | corner timber | m rate | quantity | cost |
| | | £3.30 | 19.52 | £64.42 |
| | corner insul | £2.22 | 19.52 | £43.33 |
| | loose tongues | £0.72 | 126.88 | £91.10 |
| | Ring beam | £6.60 | 27.364 | £180.60 |
| | Air-tightness tape | £0.72 | 120 | £86.00 |
| sundries total | | | | £465.45 |
| screws | screws / panel | item rate | quantity | cost |
| | | £0.02 | 104 | £2.42 |
| | panel cost | £2.42 | no. of panels | 52 |
| | screws / junct | £0.02 | 12 | £0.28 |
| | junction cost | £0.28 | no. of panels | 52 |
| screws total | | | | £140.55 |
| | | | Total £4,062.35 | |

package 6: external & internal walls

The external wall panels are overlaid with 100mm PIR insulation, breather membrane, counter-battens, battens and then either fibre cement tiles or vertical larch timber cladding.

The internal walls are timber stud walls with fermacell boards for their robustness and versatility. Tapered boards are taped and jointed for ease of self-build finishing.

The painted fermacell ground floor ceiling, internal stud walls and feature panels (package 15) contrast with the exposed OSB linings.

Total cost: Materials: £3,973.45 | Labour: £0.00

| Package 6 External & Internal Walls | | | | |
|-------------------------------------|----------------------------------|----------|-------------------|------------------|
| | m or m2 rate | quantity | cost | |
| Tile clad wall | 100mm Xtratherm insulation | £11.10 | 1 | £11.10 |
| | Breather membrane | £1.25 | 1 | £1.25 |
| | battens & counter battens | £0.33 | 6 | £1.98 |
| | fibre cement slate | £9.51 | 1 | £9.51 |
| | total m2 rate | | | £23.84 |
| wall area (m2) | | 110.258 | total cost | £2,628.55 |
| Timber clad wall | | | | |
| | m or m2 rate | quantity | cost | |
| Timber clad wall | 100mm Xtratherm insulation | £11.10 | 1 | £11.10 |
| | Breather membrane | £1.25 | 1 | £1.25 |
| | battens & counter battens | £0.33 | 6 | £1.98 |
| | square, untreated larch cladding | £12.13 | 1 | £12.13 |
| | total m2 rate | | | £26.46 |
| wall area (m2) | | 33.462 | total cost | £885.40 |
| Internal wall | | | | |
| | m rate | quantity | cost | |
| Internal wall | Fermacell 1H22 walls | £25.80 | 17.81 | £459.50 |
| | | | Total | £3,973.45 |

package 7: first floor

The first floor birch plywood structural deck is also the finish to minimise duplication of layers.

Total cost: Materials: £999.84 | Labour: £0.00

| Package 7 First Floor | | | | |
|-----------------------|------------------------|----------|-------------------|----------------|
| | m or m2 rate | quantity | cost | |
| First Floor | Birch Plywood flooring | £13.89 | 1 | £13.89 |
| | 200mm timber joists | £3.30 | 2 | £6.60 |
| | screws | £0.02 | 50 | £1.00 |
| | Fermacell Soffit | £8.20 | 1 | £8.20 |
| | total m2 rate | | | £29.69 |
| floor area (m2) | | 33.676 | total cost | £999.84 |
| | | | Total | £999.84 |

package 9: roof

The pitched roof is clad in fibre cement slate tiles. To achieve a more enjoyable volume, the trusses have a mid-height tie to allow a sloping soffit.

The u-value of the roof (using the same total construction as the walls) is an excellent 0.109 W/m2K. The roof air-tightness is provided by an intelligent vapour control membrane which is then over-clad with an OSB soffit to match the internal surface of the external walls.

High quality galvanised steel rainwater goods have been chosen for longevity and attractive appearance rather than going for the ultimate low cost option.

Total cost: Materials: £3126.93 | Labour: £0.00

| Package 8 Fireplace & Chimney (NA) | | | | |
|------------------------------------|--------------------------------|----------|--------------|-------------------|
| Package 9 Roof | | | | |
| | m or m2 rate | quantity | cost | |
| Roof | fibre cement slate | £9.51 | 1 | £9.51 |
| | battens & counter battens | £0.33 | 6 | £1.98 |
| | Breather membrane | £1.25 | 1 | £1.25 |
| | 100mm Xtratherm insulation | £11.10 | 1 | £11.10 |
| | 200mm timber rafters | £3.30 | 2 | £6.60 |
| | screws | £0.02 | 50 | £1.00 |
| | Rockwool Flexi insulation | £6.05 | 0.9 | £5.45 |
| | Intello air-tightness membrane | £2.35 | 1 | £2.35 |
| | OSB 3 soffit | £7.18 | 1 | £7.18 |
| | total m2 rate | | | £46.42 |
| | roof area (m2) | | 58.98 | total cost |
| Tie Truss | 200mm truss tie timbers | £3.30 | 30 | £99.00 |
| Rainwater Goods | | | | |
| | item or m rate | quantity | cost | |
| Rainwater Goods | gutter | £5.38 | 18.4 | £98.99 |
| | brackets | £2.22 | 32 | £71.04 |
| | joists | £3.59 | 4 | £14.36 |
| | stop ends | £2.09 | 4 | £8.36 |
| | outlet | £6.43 | 2 | £12.86 |
| | RWP | £6.35 | 10 | £63.50 |
| | connector | £3.88 | 2 | £7.76 |
| | brackets | £2.25 | 6 | £13.50 |
| | total cost | | | £290.37 |
| | | | Total | £3,126.93 |

package 10: joinery

To achieve passivhaus high performance triple glazed windows with insulated timber frames have been chosen. Although these aren't the lowest cost option their 10 year warranty and huge thermal benefits are worth the additional cost. Frame u-value 0.82 W/m2K and glass u-value of 0.52 W/m2K.

The windows to the North are kept minimal in size. The windows to the south are larger to take advantage of winter passive solar gain.

Window perimeter insulation and aluminium extension cills have also been provided for as well as various internal and external joinery items.

Total cost: Materials: £12,260.54 | Labour: £0.00

| Package 10 Joinery | | | | |
|--|---------------------------|----------|-------------------|-------------------|
| Windows | | | | |
| Green Building Store Ecocontract Ultra insulated frame | | | | |
| | area | m2 rate | quantity | cost |
| small GF N | 0.647 | £425.00 | 1 | £274.98 |
| small FF N | 0.647 | £425.00 | 3 | £824.93 |
| slot GF N | 1.389 | £425.00 | 1 | £590.33 |
| door GF N | 2.061 | £425.00 | 1 | £875.93 |
| small GF S | 0.751 | £425.00 | 1 | £319.18 |
| small FF S | 0.751 | £425.00 | 3 | £957.53 |
| slot GF S | 1.613 | £425.00 | 2 | £1,371.05 |
| large GF S | 3.405 | £425.00 | 1 | £1,447.13 |
| door GF S | 2.061 | £425.00 | 1 | £875.93 |
| Large FF S | 1.586 | £425.00 | 1 | £674.05 |
| Med FF S | 0.96 | £425.00 | 1 | £408.00 |
| | | | total cost | £8,619.00 |
| Window Sundries | | | | |
| | m rate | quantity | cost | |
| Window Sundries | Aluminium extension cills | £6.00 | 10.8 | £64.80 |
| | reveal insulation | £1.14 | 66.1 | £75.16 |
| | window air-tightness tape | £0.90 | 66.1 | £59.49 |
| | | | total cost | £199.45 |
| Internal Doors | | | | |
| | item rate | quantity | cost | |
| Internal Doors | proprietary SW doorsets | £85.00 | 5 | £425.00 |
| Stairs | | | | |
| | item rate | quantity | cost | |
| Stairs | proprietary SW stair | £750.00 | 1 | £750.00 |
| Internal Joinery | | | | |
| | m rate | quantity | cost | |
| Internal Joinery | SW skirtings | £1.23 | 86.86 | £106.84 |
| | SW architraves | £0.90 | 11.6 | £10.44 |
| | birch plywood cill boards | £5.56 | 8.96 | £49.82 |
| | | | total cost | £167.10 |
| External Joinery | | | | |
| | item rate | quantity | cost | |
| External Joinery | Entrance canopy | £900.00 | 1 | £900.00 |
| | entrance steps | £300.00 | 1 | £300.00 |
| | rear deck | £900.00 | 1 | £900.00 |
| | | | Total | £12,260.54 |

package 11: specialist products

A major part of the passivhaus performance is the MVHR system.

Total cost: Materials: £4,300.00 | Labour: £500.00

| Package 11 Specialist Products | | | |
|--------------------------------|---|-----------|------------------|
| MVHR | Paul Focus 200 (Green Building Store) + Lindab Galv steel ductw | £4,200.00 | |
| | bracketry | £100.00 | |
| | commissioning | £500.00 | |
| | | | Total |
| | | | £4,800.00 |

package 12: **electrical installation**

An allowance has been made for 3 lighting circuits, 3 ring mains and a separate cooker circuit. Only simple light fittings have been priced for.

To maintain air-tightness the services are exposed, so galvanised conduit and fittings have also been priced.

Total cost: Materials: £1,287.84 | Labour: £150.00

| Package 12 Electrical Installation | | | | |
|------------------------------------|---|-------------------|-------------------|------------------|
| Electrics | Consumer unit | | | £85.00 |
| | Internal lighting circuits x 2 (ground & first) | | | £300.00 |
| | External lighting circuit | | | £150.00 |
| | Internal sockets ring main x 2 (ground & first) | | | £300.00 |
| | External sockets ring main | | | £75.00 |
| | Cooker circuit | | | £50.00 |
| | Independent testing | | | £150.00 |
| | | | total cost | |
| Galv steel conduit | | item or m rate | quantity | cost |
| | conduit | £2.12 | 86.86 | £184.14 |
| | junctions | £2.00 | 30 | £60.00 |
| | sockets | £4.65 | 18 | £83.70 |
| | | total cost | | £327.84 |
| Total | | | | £1,437.84 |

package 13: **plumbing installation**

Individual fittings have been priced as well as sums for supply and waste pipework.

Total cost: Materials: £1,665.00 | Labour: £0.00

| Package 13 Plumbing Installation | | | | |
|----------------------------------|------------------------|-------------------|-------------------|------------------|
| Fittings | WC | £100.00 | 2 | £200.00 |
| | WHB | £50.00 | 2 | £100.00 |
| | Bath | £100.00 | 1 | £100.00 |
| | WHB taps | £50.00 | 2 | £100.00 |
| | Bath taps | £75.00 | 1 | £75.00 |
| | shower | £90.00 | 1 | £90.00 |
| | sink | £100.00 | 1 | £100.00 |
| | sink taps | £100.00 | 1 | £100.00 |
| | | | total cost | |
| Plumbing | Waste pipes & fittings | | | £300.00 |
| | water pipes & fittings | | | £500.00 |
| | | total cost | | £800.00 |
| Total | | | | £1,665.00 |

package 14: **heating installation**

Total cost: Materials: £1,200.00 | Labour: £800.00

| Package 14 Heating Installation | | |
|---------------------------------|---|---------------|
| Heating | Heating/Hot water boiler + pipework + 2 towel rails | £1,200 |
| | Professional installation | £800 |
| Total | | £2,000 |

package 15: **plastering & dry-lining**

Total cost: Materials: £123.84 | Labour: £0.00

| Package 15 Plastering & dry-lining | | | | |
|------------------------------------|------------------------------|--------|----------|----------------|
| Feature panels | | m rate | quantity | cost |
| | fermacell boards on sw frame | £10.75 | 11.52 | £123.84 |
| Total | | | | £123.84 |

package 16: **kitchen units & appliances**

Total cost: Materials: £3,000 | Labour: £0.00

| Package 16 Kitchen units & appliances | | |
|---------------------------------------|---|------------------|
| Kitchen | Base & wall units, hob, oven, washing machine, dishwasher | £3,000.00 |
| Total | | £3,000.00 |

package 17: **decoration & wall ceramics**

Painted femacell, wall tiles to wet areas & intumescent varnish to OSB linings.

Total cost: Materials: £1,174.80 | Labour: £0.00

| Package 17 Decoration & wall ceramics | | | | |
|---------------------------------------|----------------------------|--------|-------------------|------------------|
| Decoration | Wall tiles | £20.00 | 5.3 | £106.00 |
| | paint | £0.20 | 90 | £18.00 |
| | intumescent varnish to OSB | £7.00 | 150 | £1,050.00 |
| | | | total cost | £1,174.00 |
| Total | | | | £1,174.00 |

package 18: **floor finishes**

Total cost: Materials: £665.00 | Labour: £0.00

| Package 18 Floor Finishes | | | | |
|---------------------------|---------------|-------------------|----------|----------------|
| Floor Finishes | | m2 rate | quantity | cost |
| | Floor Tiles | £30.00 | 10 | £300.00 |
| | Floor Varnish | £5 | 73 | £365.00 |
| | | total cost | | £665.00 |
| Total | | | | £665.00 |

Project total £43,326.84

Total GIFA 70.14

Total cost/m2 £617.72

Total project costs:

Total materials costs: £41,876.83

Total Labour costs: £1,450

Total: £43,326.83

Total GIFA: 70.14m2

Total cost per m2: £617.72

