

This adaptable design enables a self builder to make a highly sustainable 80 sqm house for less than £50k. An even cheaper core house can be built for as little as £43k.

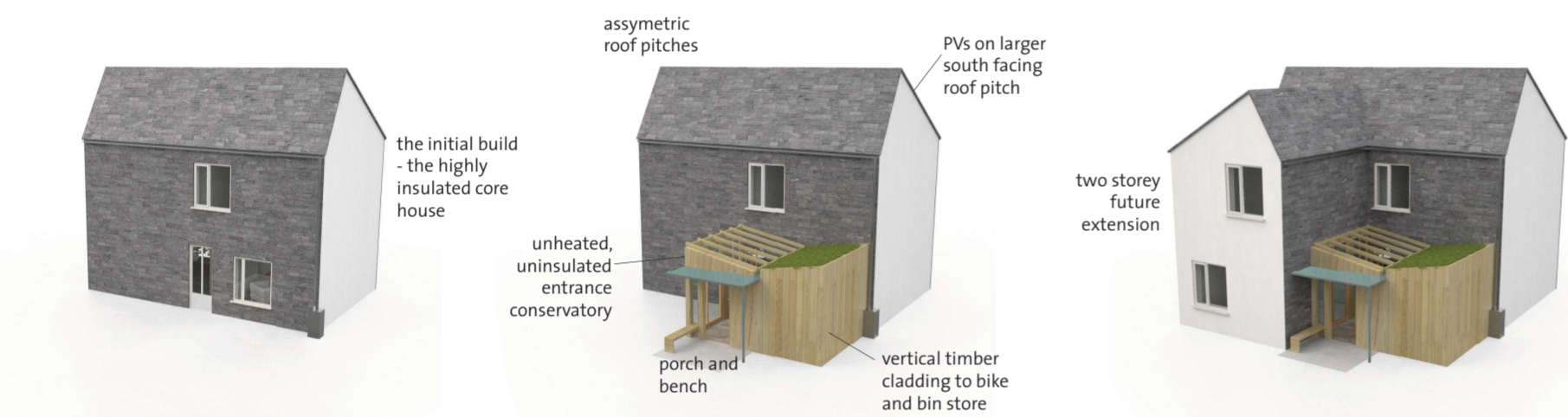
The house is super insulated and air tight, and achieves near passivhaus standard. MVHR is avoided for reasons of cost and comfort - windows are carefully sized to avoid overheating. Curtains provide additional nighttime insulation. A large array of PVs fills the south-facing roof. Hot water and heating, with tiny radiators, is electric.

Wherever possible we have avoided incorporating manufactured components and bought-in gear, in favour of site-constructed alternatives which save money through do-it-yourself, and which can be carried out by a first-timer with limited skills. Some things though - stairs, trussed rafters, windows, electrics, rendering – are better manufactured off-site, or need specialist skills.

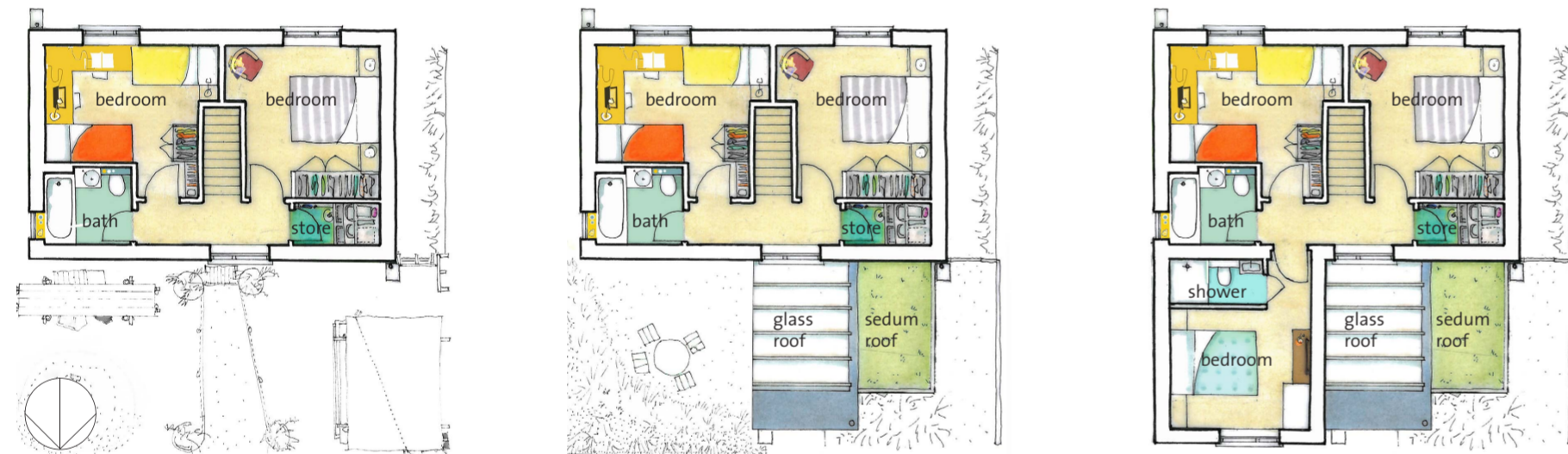
All through, we have aimed to pare the project down to essentials without compromising on the enjoyment that careful, detailed design can bring to the house's users.

The house can adapt and grow as its occupants' needs change over the years. We have shown how it can expand to provide a third bedroom and a ground floor home office which, as needs change, can convert to an accessible ground floor bedroom with adjacent shower room.

It is a house that can wear a variety of clothes depending on user preference, and on its location and surroundings. Our base option, left, is clad in fibre-cement slates and render; other cladding options are shown below.



Phase 1a
The asymmetrical roof and the front face of the house are clad in fibre-cement slate. The sides and rear elevation are render.



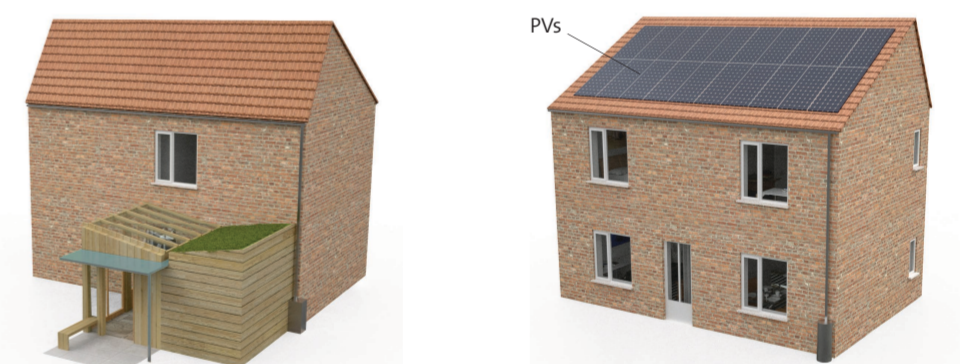
First floor plans above, ground floor plans below



Phase 1a
A highly insulated, near-passivhaus standard 69 sqm two-storey house core with kitchen, living and two bedrooms that can be built for £43,460.

Phase 1b
The house is completed by the addition of an entrance conservatory and store. Neither of them is insulated or heated, but provide useful space cheaply, bringing the house area to 80 sqm for a total build cost of £47,760.

Phase 2
As the household grows or needs change, a two storey 26 sqm extension can be built with minimum disruption to the occupants, providing two extra rooms that can be an extra bedroom and a home office.



These views show the front and back of the house in various guises. The option above shows a brick house with pantiled roof at the end of Phase 1b.



Alternatively, the roof and front face of the house could be clad with cedar shingles, with the sides and back of the house rendered, and timber windows clear finished. The house is shown at the end of Phase 2.



The core house is shown at the end of Phase 1a, clad throughout in vertical timber boarding, with a standing seam aluminium roof.



An option with white timber or fibre-cement siding, with an asphalt tiled roof, at the end of Phase 1b.

Cost report

Works Package	Construction Element	Materials	Labour	Total
Works Package 1	Set up, Clearance, Demolitions....	£ 2,050.00	£ -	£ 2,050.00
Works Package 2	Foundations (<i>up to DPC</i>)	£ 2,460.00	£ -	£ 2,460.00
Works Package 3	Ground Floor Slab or Suspended Floor	£ 1,400.00	£ -	£ 1,400.00
Works Package 4	Drainage & Service Trenchwork	£ 1,350.00	£ 485.00	£ 1,835.00
Works Package 5	Specialist Building System (<i>eg timber frame, SIPs, etc</i>)	n/a	n/a	n/a
Works Package 6	External & Internal Walls	£ 10,770.00	£ 960.00	£ 11,730.00
Works Package 7	Intermediate Floor Zone (if applicable)	£ 1,860.00	£ -	£ 1,860.00
Works Package 8	Fireplace & Chimney (if applicable)	n/a	n/a	n/a
Works Package 9	Roof Structure, Insulation & Covering	£ 4,625.00	£ 300.00	£ 4,925.00
Works Package 10	Joinery (<i>Windows, doors, stairs, skirtings...</i>)	£ 5,690.00		£ 5,690.00
Works Package 11	Specialist Products (<i>eg: Eco products...</i>)	£ 1,920.00		£ 1,920.00
Works Package 12	Electrical Installation	£ 1,300.00	£ 3,000.00	£ 4,300.00
Works Package 13	Plumbing Installation	£ 2,730.00	£ 350.00	£ 3,080.00
Works Package 14	Heating Installation	£ 800.00	£ -	£ 800.00
Works Package 15	Plastering (<i>or dry-lining</i>)	£ 600.00	£ -	£ 600.00
Works Package 16	Kitchen and Utility Units (<i>+ appliances</i>)	£ 2,350.00	£ -	£ 2,350.00
Works Package 17	Decorations & Wall Ceramics	£ 900.00	£ -	£ 900.00
Works Package 18	Floor Finishes	£ 1,260.00	£ 600.00	£ 1,860.00
TOTAL		£ 42,065.00	£ 5,695.00	£ 47,760.00

Areas and costs by phase

All areas are GIA gross internal areas in square metres

The costs in the summary table above, and in the cost breakdowns overleaf, refer to Phase 1a, the Complete House

	Phase 1a	Phase 1b	Phase 2
	Core house	Complete house	Future house
Insulated first floor core house	34	34	47
Insulated ground floor core house	35	35	48
Conservatory entrance		8	8
Bike shed		3	3
Total	69	80	106
Cost of each phase	£43,460	£4,300	£16,400
Cumulative total cost	£43,460	£47,760	£64,160



Materials Labour Sub-total Total

1. Set up, Clearance, Demolitions

Buy a second-hand slab container and sell it at end. Padlock.
Assume some tools and equipment already owned. Buy additional basic tools.
Hoarding
Hire scaffolding
Clear vegetation, set aside topsoil.
All by self builder, except scaffolding

£600 £600
£250 £250
£100 £100
£1,100 £1,100

£2,050

2. Foundations *(up to DPC)*

Excavate trenches, using hired small JCB
Deep strip foundations, mass concrete all in one pour.
Blockwork with filled cavity up to DPC.
All self build, hired JCB, ready mix concrete.

£260 £260
£1,000 £1,000
£1,200 £1,200

£2,460

3. Ground Floor Slab or Suspended Floor

Ground supported slab on hardcore, insulation, screed.
All self build, ready mix concrete

£1,400 £1,400

£1,400

4. Drainage & Service Trenchwork

Trenches, excavation as follows:
Single trench along side of building for foul drainage,
2 no inspection points.
2 no trenches from RWPs to soakaways.
Underground drainage installation
3 no soakaways
Connection to sewer

£1,350 £1,350
£485 £485

All self build, using hired JCB (cost in 2. above)

£1,835

5. Specialist Building System *(eg timber frame, SIPs, etc if applicable)*

Not applicable

6. External & Internal Walls

On site carpentered timber frame
Artificial slates on battens on membrane on insulation batts
Gutex render system on insulation batts
Plasterboard inner lining, membrane
Vertical timber cladding on site-carpentered timber frame to cycle/bin store.
Internal walls on-site carpentered timber studs, insulation, plasterboard.
All self build, except Gutex render.

£5,200 £5,200
£1,800 £1,800
£1,200 £960 £2,160
£760 £760
£460 £460
£1,350 £1,350

£11,730

7. Intermediate Floor Zone *(if applicable)*

SW joists on hangers
Plasterboard soffit
Insulation
Chipboard on sound absorbant layers
All self build.

£1,140 £1,140
£160 £160
£175 £175
£385 £385

£1,860

Materials Labour Sub-total Total

8. Fireplace & Chimney (if applicable)

Not applicable

9. Roof Structure, Insulation & Covering

Prefabricated timber trussed rafters @ 600 centres	£1,125		£1,125
Tyvek, battens	£560		£560
Artificial slate roof covering	£1,450		£1,450
Ceiling to roofspace: plasterboard, insulation between. Insulated access hatch.	£320		£320
Single glazed roof to entrance conservatory, mill-finished aluminium patent glazing bars	£640	£300	£940
Green sedum roof to store on carpentered timber joists and ply deck, uninsulated	£380		£380
Black plastic gutters, downpipes. Rainwater butt.	£150		£150

All self build, except trussed rafters and patent glazing.

£4,925

10. Joinery (*Windows, doors, stairs, skirtings...*)

All bought joinery are standard proprietary items. All glazing to insulated core house is double/triple glazed, argon filled, low E glass.

6 no windows, side hung outward opening light	£2,310		£2,310
2 no small windows, top hung outward opening light	£480		£480
2 no external glazed doors	£620		£620
Front door with vertical battening	£240		£240
5 no internal solid core flush doors	£150		£150
Door to cycle store to match vertical timber cladding.	£120		£120
Single glazed screen and door to entrance conservatory	£400		£400
Skirtings, architraves, internal sills, etc	£420		£420
Straight stair, handrails	£400		£400
Bench inside and outside front door.	£50		£50
Cupboards, shelving, misc joinery.	£200		£200
Ironmongery	£300		£300

All joinery fitted/installed/constructed by self-builder.

£5,690

11. Specialist Products (*eg; Eco products...*)

Roof-mounted photovoltaic panels	£1,920		£1,920
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£1,920

12. Electrical Installation

Mains electrical connection	£350	£500	£850
Lighting, power, TV/data/telecom	£750		£750
Smoke detectors	£50		£50
Light fittings	£150		£150
Installation, testing, certification by electrician		£2,500	£2,500

£4,300

	Materials	Labour	Sub-total	Total
13. Plumbing Installation				
Mains water connection	£150	£350	£500	
Hot and cold water. Hot water electrically heated from PVs/mains – Fabdec Excelsior cylinder, solar unvented 175 litre. Immersion heater.	£1,150		£1,150	
Garden tap	£50		£50	
Rainwater butt.	£80		£80	
Sanitary appliances: shower in bath, 2 no WCs, 2 no basins, sink taps.	£1,200		£1,200	
Connect to appliances above plus washing machine	£100		£100	
<i>Installation by self-builder, electrical connections - included in 12. above - by electrician.</i>				£3,080
14. Heating Installation				
Electric radiators, 6 no	£720		£720	
Electric towel radiator, 1 no	£80		£80	
<i>Installation by self builder, connection by electrician, included in 12. above.</i>				£800
15. Plastering (or dry-lining)				
Plasterboard to external walls, internal partitions, ceilings. Tape and fill. (Plasterboard included in 6. 7. and 9. above)	£600		£600	
<i>All by self builder.</i>				£600
16. Kitchen and Utility Units (+ appliances)				
Ikea kitchen units	£1,100		£1,100	
Ikea ss worktop w integral sink.	£450		£450	
Timber worktops from redundant scaffold boards	-		£0	
Shelves and racks	£50		£50	
Appliances: electric hob, oven, fridge freezer, washing machine.	£750		£750	
<i>Assembly, construction by self builder. Electrical connections by electrician, included in 12. above</i>				£2,350
17. Decorations & Wall Ceramics				
Emulsion paint to walls and ceiling	£350		£350	
Satinwood to joinery	£175		£175	
Tiling to bathroom	£250		£250	
Tiling to kitchen	£125		£125	
<i>Decorations and tiling by self builder.</i>				£900
18. Floor Finishes				
Bathroom and kitchen; sheet vinyl	£220		£220	
Conservatory porch: floor paint on screed	£40		£40	
Elsewhere: carpet	£1,000	£600	£1,600	
<i>Vinyl and floor paint by self builder, carpet by fitter.</i>				£1,860
Total				£47,760