

Episode 302

A contemporary Passivhaus home in a rural context – with Martin McCrae and Mhairi Grant

The show notes: www.houseplanninghelp.com/302

Ben 00:00

This is House Planning Help Episode 302. Hi there. I'm Ben Adam-Smith, and this is the podcast for you if you're interested in self-builder, because I'm exploring what houses we should be building in the 21st century and trying to break down the major roadblocks that may get in our way. Coming up, I've got two guests, Martin McCrae, and Mhairi Grant, and we're going to be looking at their self-build in Kippen, with particular interest to how well they've done with their money. Quite a bit of sweat equity into this project as well. But it's a cash project. So they didn't really want to borrow any money, which I think is very strong of them. So lots of details to dig into in a moment.

Ben 00:40

My diary has been quite empty over the last year or so yeah, that's what happens when a pandemic comes along. But it's lovely to be getting a bit busier. And one of the events in my diary is a presentation that I'm doing as part of the 40th anniversary of Homeworld. So Homeworld was an important housing expo actually, it was focusing on innovation, and they built all these houses, got different people almost competing against each other and then sold them for private use. So, really interesting. I've been there to Bradwell Common and visited them as well.

Ben 01:14

So this is nice now that they wanted me to focus less on the actual Homeworld, but what has happened since and what would we like to happen? So I thought that'd be a really good title for this. What would Homeworld 2021 showcase? There obviously isn't such a thing. But I thought this gave me license, I'm going to imagine what I would like to see there, and what we will be focusing on with all the usual suspects, the climate, emergency, resource depletion, overpopulation, pollution, all of these things, and in construction, in particular, be lovely to turn a corner and think that every new project was getting these things right, at how we can be more ecological with our design.

Ben 01:56

So what I'm going to do is, I will put that into the show notes today to the events and as it goes off into the distance, then you'll be able to look back

at the presentation, and all of the celebrations that they held there, so that in today's show notes.

Ben 02:09

Right then, let's get to today's featured interview. We do love a case study here. All sorts of interesting things to focus upon, we'll look at land, how they found their plot, also, the concept of the house, which is box within a box. I think they've done particularly well with the money. So that's a side I want to know, we could go on endless. We love tips on money here how we can do more with less. So we are going to probe Mhairi and Martin to find out as much as we possibly can. Let's get underway, I started by asking Mhairi to tell me a little bit about themselves.

Mhairi 02:43

So we met at University at the Mackintosh School of Architecture in 1997. I was the year above Martin. So I went there in '96. And then we've been friends for a really long time, and then a couple for quite a long time as well now. And then we decided at one point that we wanted to build a new house. So this was the adventure that we decided to go down. And then we decided that we really wanted it to be a passive house. We were living in Glasgow at the time in a flat, which was a really, really beautiful period property. But we had spent about four years renovating it. And it was still very cold and kind of you know, thermally quite uncomfortable, even though it was very beautiful aesthetically. So we were ready for a new challenge. But we didn't want to undo all the work we'd done in that property. So we decided building a new Passivhaus was the next step in our journey.

Ben 03:28

And the land-finding journey. It wasn't that easy. Maybe Martin, you can tell me a little bit about that.

Martin 03:35

We probably took about two years, two to three years of sort of looking for sites online and going to visit sites and discounting a lot of sites. Particularly where we started looking for somewhere around Glasgow and then coming further afield as sort of prices, we couldn't meet the sort of figures they were looking for, for north facing sites unserviced. And then eventually Mhairi stumbled upon this one online for our site in Kippen. And just kind of coincidentally, I'm kind of from two villages along, which wasn't intentional to look for somewhere in this area, but that's just the way it worked out. And we found a plot and we liked it.

Ben 04:09

How easy is it actually to find pieces of land within your budget? Because you said your budget's about £250,000 haven't you for the, is that for everything? Was that just the build cost?

Mhairi 04:20

That was just the build cost. So we spent £135,000 on the land. And that was about £20,000 more than we had initially set out to spend. But it was one of those things as we kept searching, it became clear that the plots that were about £100,000 or so which had been our initial sort of idea of a budget for a plot, tended to be much more remote than we wanted to live or tended to be much smaller than we were looking for. Or as Martin said north facing, you know, they had some other criteria that didn't work for Passivhaus for example, or didn't work easily. So we ended up upping our budget for the plot a little bit in order to find something that sort of met our needs better.

Ben 04:56

And what did you want from a site, obviously, so the access is one thing. But what were the other criteria?

Mhairi 05:03

We wanted to be somewhere semi rural, we wanted to be in a village or a small town because we wanted to still have daily communication with other people, we didn't want to live in complete isolation. But we also wanted to be somewhere that had the feeling of the countryside because we'd lived in the city for a really long time. And we were kind of ready to be somewhere, you know, where we could go for walks and be outdoors a bit more.

Mhairi 05:22

So somewhere that was big enough to give us a garden as well, I'm really interested in gardening. So that's been really, really enjoyable having a garden for once. And we also wanted something south facing with a kind of outlook towards the south that we knew wouldn't get built on, so that we could control the view a bit more. And so that was why we ended up picking this plot, because there's a tree belt to the south, and then a kind of open field to the west, which is a designated area of outstanding natural beauty. So very, very unlikely to ever get planning permission to be built on. So that gave us that kind of feeling of the countryside when you're in the house, but still connected to a village.

Ben 05:54

And what was the process? You mentioned a few different ways of sourcing it, but how did you end up finding this piece?

Mhairi 06:00

So this piece of land was actually advertised on an estate agent website. We found kind of details online, and then just came to see it. We did a whole sort of range of ways of looking from making contact with local estate agents in a kind of area around an hour outside of Glasgow and telling them we were looking for plots, and so on. We actually looked at existing buildings as well. So we didn't rule that out. We looked at barns and dilapidated buildings and so on. We were open to that idea at the beginning. And we then just a lot of Google searching, to be honest. I'm

looking at Google Maps and you know, checking routes and how far away things were and things like that.

Ben 06:35

Okay, how many sites did you look at on paper? And how many did you visit?

Mhairi 06:40

Gosh, I would say, if we had to put a number on it, we visited probably 20. Something around 15 to 20. And I would say that on paper, we looked at at least three times that. I mean, we looked at a lot of things online, and then discounted them for one reason or another before we went to actually see things.

Ben 06:58

This is the process though isn't it? It's just interesting to see your take on it. And was it obvious when you got to that site? Or was there a bit of discussion between you?

Mhairi 07:07

Well it was interesting because this site is a one of two that were for sale at the same time. And we actually came to look at the one that's slightly to the north of this one, because it was slightly smaller and a bit more affordable, therefore, but when we got here, we saw this one and it goes down a slope and there's a little bit of a barn at the bottom. And we just fell in love with it. To be honest, it just was so picturesque and also had the advantage of being towards the south of the other site. So we knew that someone wouldn't come along and build in front of us, like I say, so we could have this outlook towards our own garden that we knew would be sort of more or less permanent.

Ben 07:39

Yeah, I think that's something that perhaps if you're not in the industry, you don't think about you get this lovely open piece of landscape and then you don't have at the back of your mind that it could you know, it's possible some of these places, I've seen it happen multiple times where people have put the housing estate right next door to where you thought it was going to be open forever.

Ben 07:57

So Martin then, tell us a bit about acquiring the site? Did it have a consent did you say to begin with or was that part of what you needed to do now?

Martin 08:06

No, it did actually have a consent originally on the plot by the owner, and the owner had done a sort of design himself for two very traditional houses. They'd been approved by planning so we had a precedent on the plot, of something. So we knew that something would be allowed to be built. We're just outside of the conservation area, so for us, it was quite a good one in the sense of it had a precedent of an existing building on the

approval, but we could maybe tweak it a bit or try and go for something more contemporary, and not be within the constraints of the conservation area.

Ben 08:39

Yeah, that is just such a great freedom that you're given. What is it like then, if you want to build a contemporary house? Do you ever have a fight on your hands?

Martin 08:48

I would say we do. Obviously location specific but we deal with this council, Sterling, quite a lot. And maybe I suppose when we built or when we did the planning application, what, eight years ago now, we were a bit less well known to the planning department, I suppose. So there was a wee bit of resistance in the design. And it's not for everyone a cube, we accept that. But there wasn't planning reasons why our design couldn't be accepted, particularly because it wasn't in the conservation area. And it's also down the back of the Main Street, so you can't even see it from the road.

Ben 09:17

Tell us a little bit about the design process then, maybe in relation to the budget. We know that you wanted a Passivhaus, that materials and so forth are important to you. But how are you balancing all of this?

Mhairi 09:31

So we knew at the beginning, in order to make this work, we would have to do some of the work ourselves. I mean, I don't think in all honesty, we anticipated quite how much we would have to do. But that is all part of the journey. And we've learned a lot from doing that so it's not a regret.

Mhairi 09:43

We definitely set out to create a simple and clean design that would allow us to easily meet the Passivhaus standard, and we wouldn't then be fighting against that all along. And the other thing we wanted to achieve was sustainability gold and the technical standards in Scotland. So that was another set of criteria to do with water saving and acoustic performance internally and so on that we knew we wanted to meet. So again, we were constantly referring back to these metrics, in order to make sure that our design decisions weren't going to make it overly complicated to comply with the standards that we wanted to achieve.

Ben 10:15

And you've also got a business that you're trying to run. So where is the balance there of I could be earning money in the office, but I'm on site, or is this weekends? How are you going about the work?

Mhairi 10:28

Yeah, that was definitely a challenge. And at the very beginning, Martin took 12 weeks off work to build the timber frame with two joiners. So you

know, there was 12 weeks where I was in the office on my own, and Martin was on site all day. We've always worked together, just the two of us. So I suppose we're quite used to working out these things as we go. Because we've you know, we don't have employees, so we don't have to sort of factor that into the equation or into our decisions.

Ben 10:52

Did that mean then a drop of income over that? I mean, it wasn't really a long period of time though is it, three months?

Mhairi 10:59

Yeah, it did yes. I think probably over the whole six year period, the most significant thing has been balancing our income with managing to then spend. So that's partly why it's taken so long, so that we can earn money as we go in order to finance the build, but also we have made quite a big sacrifice in terms of social life. And, you know, I mean, a lot of our free time has been spent building this house. So I mean, there just have been a lot of weekends when we've not gone to things or not seeing people, because we've had to plasterboard or dig up a driveway and put in drainage or whatever it happened to be. So that's part and parcel of a self build.

Ben 11:35

So often when I speak to architects, though, you don't ever begrudge that. Was this a good experience or would you rather have hurried it along?

Martin 11:44

I think we'd rather have hurried it along in the sense that six years is a long time to build a house. And I think we thought originally, it would probably be two to three. But we learned an awful lot. We know quite a lot know about how things go together. Building a Passivhaus isn't as daunting as some people make it out to be. I think it's just a matter of doing things correctly in the correct order and rigorously looking at the detailing. But I don't think we begrudge it now. I mean, I think maybe halfway through, you'd say oh, that this is starting to drag on a bit. But I think sort of looking back on retrospectively I think we've still got fond memories of doing it. I mean, obviously, there's bits and pieces you'd change if you were to do things again, but nothing dramatic about it we would do differently if we could redo it again.

Ben 12:22

So how did you keep your energy up? That's the tough point, isn't it? If you're going to do a lot of the work yourself, you need that momentum. And it's not always there is it you're going into winters again, so any tips there?

Mhairi 12:34

Yeah, that was definitely challenging. And I mean, even taking something like the cladding, for example, we did that over four years. So every summer for four years, we spent a whole summer cladding an elevation

together. And that after summer number two, for example, that gets quite wearing. But I suppose all you can do is, you know, remind yourself of what it is you're trying to achieve and that it will be worth it in the end. It's like any enormous task, you break it down into smaller tasks, and then you tackle each of those, and then you move forward to the next task and the next task and so on.

Mhairi 13:06

I don't know, I think working for ourselves, we've learned that as a way to deal with coping with stress at work as well. So that's the technique that we used for the house. And it seemed to kind of get us through it. And of course, I think being in it together did make a difference, we could fully understand what the other was thinking or feeling. Because we were going through it at the same time and going through the same thing.

Ben 13:24

A lovely shared process, I'm getting that feeling here. So just rewinding then, did you know how you were going to build this, you know, once you had this contemporary vision, what it was going to be physically?

Mhairi 13:37

Well, we knew we wanted to do timber frame. That was a definite, partly because we think it's a sustainable material to build with and partly because it's a material we knew we could build with, so that was important. At the time, we struggled a little to find a timber kit company who were either able to offer us a Passivhaus-ready solution or willing to adapt their current solution to meet our requirements in terms of U-values and so on. So that's why we ended up stick building the frame. So again, kind of decisions like that, then lead you to design decisions, I suppose, and vice versa, because the whole thing is interlinked.

Mhairi 14:10

So for example, having a large, at the beginning we decided we wanted to have a large double height space. And what that meant was a change in the wall construction at the double height area compared to the single height area. So you know, we had to resolve some technical issues with that with the structural engineer, because we'd made that design decision early on. So yes, it was kind of a circular process.

Ben 14:30

Double height is it's a tough one isn't it, with Passivhaus because you're rewarded for floor area.

Mhairi 14:36

It's very challenging, everything once you get into it, you realise everything's ratified against the floor area, you start to feel a bit a little bit kind of, well, that's a bit frustrating because I could have had slightly less insulation over here or slightly less work on the window installation detail, for example, in order to have coped with that double height. But for us, because that again because the building is a kind of relatively static

shape in that it's a cuboid, the double really gives some drama. And I think it's very unexpected when you come into the house, which is really nice. I mean, it's still every time I come in, and obviously having designed it and lived with it for many years, you know, it's still a nice not surprise, that's too strong a word obviously, but it's a nice feeling to come in and experience the double height.

Ben 15:15

Yeah, I would agree. In our house, admittedly, again Passivhaus, we perhaps didn't have a huge double height space, but it was something that I really wanted. And you do always you just enjoy that feeling of a bit more space.

Ben 15:29

So maybe you could take us through the build Martin, I suppose, because you were on site in those early days. So what were you able to achieve in those first three months?

Martin 15:39

The first few months, probably, there was quite a lot actually that went on. We obviously we didn't do the groundworks ourselves. We got somebody to dig out all the foundations. But we installed the Isoquick EPS raft foundation ourselves with some friends over a weekend. So that was quite a good process, getting some friends involved, getting something that kind of appeared quite quickly. And quite easily actually. And it was something that we would certainly do again ourselves. And then we got somebody to pour the slab to power float it. And then from there, we built the frame.

Martin 16:05

So in the first couple of months, the frame went up. And we had a sort of building shape and you could experience some of the spaces albeit with no sheet materials on so it's kind of an open frame. And I suppose from that point, once the joiners were off site things sort of slowed down a little bit because obviously it's just Mhairi and I doing sheeting and joinery and various things like that.

Mhairi 16:24

Yeah, I mean, doing the installation, for example, Martin and I did all that together. And all the wall installation was, say, wood fibre batts that were hand cut and hand fitted. And that took us about four months taking as many days off work as we could and then evenings and weekends.

Ben 16:38

Evenings, they are tough. They were the ones that always I struggled with or just oh, I don't know, I don't have the energy to do that. But yeah, respect to you.

Ben 16:46

And then one thing that has really impressed me is, and I don't know how you did this so who wants to take this, but you didn't take any material really off site, no skips, no spoil. So how was that achieved? Was it just perfectly flattened, didn't really need to dig down or, you know, even everything that arrives on site comes packaged in so much stuff. So were you very careful with what did come to site?

Mhairi 17:10

Yes. So in terms of the digout, we basically just relocated the ground, you know, that got dug out on the site. So because the site was quite steeply sloping, after about a third of the length it drops off quite steeply to the barn. So we basically just moved the ground from one location to another and therefore created a slightly flatter garden, which is really nice. And then that lets us terrace it down to the barn after that, but it has given us an area to actually have a patio and a deck and things like that.

Mhairi 17:36

And then in terms of materials and packaging, we were just really diligent, we tried to buy things with as little packaging as possible obviously. All of the pallets we either used or broke up and then were given to my dad for fuel. All the plastic was recycled, where it was possible to recycle it. Things like plasterboard, we were just really, really rigorous about not having excess waste, and just using up everything we could. And the same with things like the wood fibre insulation, we used off-cuts in places like the window reveals where we just had a narrow thickness, so we were able to just stack lots of off-cuts rather than buying a whole new piece. So yeah, we just paid a lot of attention I think, to trying to be resourceful and not wasteful.

Ben 18:18

Do you think that you did invest quite a bit of time, you probably don't notice it, but if it had been going at a faster pace, the project, would you have been able to do the same? Or is there trade off?

Martin 18:29

Yeah, probably not. I mean, if you imagine stacking a window reveal with tiny strips of wood fibre insulation, as opposed to cutting one single sheet and putting it in, then obviously even you look at that you think, okay, say, even it was double the time, probably triple the time to do that one job and you sort of multiply by the number of windows, you can see the time adding up. But for us on a tight budget, we can't afford to buy excess amounts of material and then just skip the sort of off-cuts. And I think there's a major problem in the construction industry where the amount of off-cuts of certain materials and wastage is just astronomical. Approximately 40% of plasterboard on site is just put in a skip. And when we had I think about four pieces of plasterboard, at about A3 size was our off cuts from the whole build. And I just put them in the car and took them to the tip. There was no need to sort of get skips based on that kind of level of wastage as what we had.

Ben 19:20

Yeah, I think you've done really well. So how long was it until you were watertight?

Mhairi 19:26

I think looking back it was probably six or seven months, slightly longer than would be ideal, and certainly longer than we try and push forward with our clients projects. But sometimes you just have to be a bit more prepared to cover things and protect them temporarily. So for example, with the cladding taking that long, we did actually put a temporary breather membrane over the battens in order to just give us a little bit more kind of waterproofing until we got our cladding on and then each as we went and did each elevation, we could strip that back.

Ben 19:56

So you sold your flat. Where were you staying at the moment while all this is going on?

Mhairi 20:02

So we rented in the village in a couple of different places. We actually sold our flat very quickly, which was a bit of a surprise. So we didn't even have our building warrant approved by the time we moved to Kippen. So we were kind of here a little earlier than we thought we'd be. And so we ended up moving a couple of times into rented property and then we actually stayed in a caravan for nine months at one point until the building was ready to be camped in.

Ben 20:23

And at that point, does that then make you think write the final push?

Martin 20:28

Definitely. When you're living in a caravan and you're running on an electric bar heater permanently to stay dry and warm, and you've got a house sitting next to you, which is sort of naturally dry and warm without any heating on or anything, you start to get a bit resentful of where you're staying and it focuses your mind to move on and try and get in. So I think that was the last straw. We were living obviously in a tiny two berth caravan that was our office and it was our kitchen and our bathroom and it was everything simultaneously. And it just I think nine months of being in a caravan and water freezing over winter, things like that it just yeah, it just made you realise, okay, it's not finished the house but we're gonna move into it and sort of get one room prepped that we can sleep in and have our computers in and things and it's not going to be too dusty, and finish the rest while we were staying in it.

Ben 21:12

Now what state were you in when you moved in? What was left to do?

Mhairi 21:15

So everything was electrically safe. That was very important as we made sure that we had our electrical completion was done and we were plaster boarded in most of the house and then we basically like Martin said, we made sure we had one room that had a kind of relatively dust free floor covering. But we didn't have a kitchen worktop for example, so we had a sheet of OSB for a kitchen worktop for about a year maybe. We didn't have our linoleum flooring upstairs down, so we just had plywood. We didn't have the timber flooring in the halls upstairs down. So again, we just had the kind of acoustic flooring system there.

Ben 21:49

Where do you put the finish line? Are there still little things that you would like to do in the house?

Mhairi 21:54

No, I think for us, the house is now considered finished! I think we're happy that it's done. And we're just moving on gradually to doing the landscaping around the house. So we've done this sort of peripheral landscaping last year. We did a patio and then got some gravel down and got our deck done last summer. And now we're just moving on to kind of slightly further away from the house into the garden getting planting sorted that kind of thing.

Ben 22:15

How have you found the Passivhaus then? You've obviously read about it and seen them. What's it been like to live in one?

Mhairi 22:22

I mean, honestly, it's amazing. It has exceeded our expectations, I think in terms of comfort. And we were saying to each other yesterday on our daily walk that actually we've kind of spoiled ourselves because we really wouldn't want to live in anything else now that we've done this! It's really comfortable. It's really easy to live with as well. I think that's something I really like. There's so little interaction with the tech and things like that yes, for us it's been really pleasant.

Ben 22:48

And what about things like overheating? You've got a contemporary design where you've got some nice big windows, obviously, you want this. So were you very careful during the planning stages and how has that ended up? Has it worked okay?

Mhairi 23:00

Yeah, we were very careful when we were designing how much window we had on each elevation. And we were definitely aware at the certification stage and I discussed it with our certifier quite a lot, that we had a higher risk in our master bedroom, which faces west and has a large fixed west facing window, and then a smaller opening window. So we talked a lot about the how to kind of mitigate overheating, and whether we should have a shading device above that window, for example. And

we decided that because we knew we were going to be the end users, we were happy to interact with the building. And we have a roof light above our master en-suite shower, for example. So what we do in summer to avoid overheating is basically open the roof light, open the bedroom window on tilt and leave the en-suite door open. So we do purge ventilation like that overnight and that really works.

Mhairi 23:44

And then we also made sure we had an opening window in both of the upstairs and the downstairs halls so that we could have some cross ventilation during the day, for example, but without having to rely on doors being open. And I think that's really important because I think habitually, people do shut their doors, you know, internal doors more frequently than they maybe realise. So it was you know, it was quite yeah, we definitely had a strategy at the start, and we stuck to it, and it has worked.

Ben 24:08

And have you found this has led on to more Passivhaus projects within the practice?

Mhairi 24:13

Yes, definitely. To the point where yeah, which is great, because it's really what we want to work on. And to the point where last year, at the start of 2020, we decided that we would make a commitment to only design our new builds to Passivhaus Classic standard as a minimum. So that's what we're doing from now on and, and to be honest, that felt like a bit of a leap because there's always that worry when you, you know you work for yourself and you're a very small practice, that you make a decision to only do a certain thing and then if that line of work dries up, you know, you feel you might be stuck. But it's something we just feel so strongly about that we thought you know, that was a worthwhile risk to take, I suppose.

Ben 24:49

Yeah, I don't think you need to worry too much. It delivers doesn't it and you must have that gut feeling as well. You know, that's the case.

Ben 24:56

Just going back to some of the other environmental criteria that you've got, you've obviously got this lovely timber frame, is that locally sourced is that from Scotland?

Mhairi 25:05

It's a little hard to be absolutely certain where the timber came from. And to be honest, at the very beginning of our journey on this house, because it was quite a while ago, we didn't really have a strong feeling about embodied carbon and things like that. So the decisions we made at the beginning where that all the timber had to be FSC, and those were the kind of decisions we made rather than necessarily locally sourced. But we did get it from a local sawmill, so I suspect it is Scottish timber, but I couldn't say that with absolute certainty.

Ben 25:30

And some of the other elements I know, you know, water design efficiencies, you said all those things at the beginning, but can you run through some of those?

Mhairi 25:37

Yes, so part of the sustainability gold section in the technical standards in Scotland is water-saving measures. So we have low flow fixtures and fittings on all of our taps and our showers and so on. And because we have a sedum roof, we've attenuated about 40% of the rainwater from the roof with that, so we only have one rainwater pipe for the whole of the flat roof area. And that then comes down off the building and goes into a catch pit that's filled with stones that we sourced either on the site when we were doing the excavating, or we had two clients who were doing demolitions of sandstone extensions nearby, so we salvaged quite a lot of sandstone from their projects. And we've used that in our landscaping.

Mhairi 26:13

So our rainwater goes through this catch pit that's filled with stones, and then goes along a trough and goes into a rain garden, which is basically an elevated planter in the garden that has certain types of plants in it that can cope with being either saturated or quite dry. And then there's an overflow from that, that goes to the barn at the bottom of the garden.

Mhairi 26:30

So we were quite keen to do this kind of, I suppose it's quite conceptual, but this sort of journey of the rainwater that sort of runs through the garden that you can visually see where the rainwater is going.

Ben 26:40

And Martin, you've got renewables as well?

Martin 26:43

That's right, we've got PVs on the roof. Not a particularly big array: 1.5 kilowatt array, but it's enough that in the summer we can run things like a dishwasher, then the washing machine and pays for itself at that point. We've also got a solar thermal array, which makes a massive contribution for our hot water needs. It's on the south facing north side of the parapet, and, you know, it massively contributes during the year to the point where we kind of almost get a little bit too much ourselves for just two of us in our four bedroom house in the summer. But it's certainly something we would recommend. It's one of those things, I think, solar thermal, slightly underused in Scotland, and it works even well on overcast days as well. It's definitely been a great choice as part of the house is renewables. We're direct electric here and we have no combi boiler or no air source heat pump, we just have some infrared panels for the heating.

Ben 27:35

And where have you put those, in bathrooms?

Martin 27:38

No, actually, we've got three on ceilings, one in the living room, one in the kitchen, and one in a bedroom. And then we've got another one in the double height space. And we find they're the kind of best places, particularly the double height because of the slight stratification of the air in that space. It wants to be slightly a position where you put a heating source.

Ben 27:57

So explain to me again how it works. It is you know, normally you think of having something low down. So why are they on the ceiling?

Martin 28:05

Well, infrared panels work like the sun where they actually are physical radiators rather than the misnomer of a radiator, which is a convector. So you can put them on the ceiling and it'll radiate heat down onto the surfaces like our concrete slab, and then those themselves release heat. So it's marketed as something, the biggest way they can sort of describe it is to say it's like standing in the sunlight. It's a hard one to describe until you've actually experienced what they're like. But they seemed to work quite well in the passive scenario.

Ben 28:32

And that has worked well in terms of keeping up to temperature? You haven't had any issues there in the depths of winter?

Mhairi 28:39

No, no, they seem to work very well. I mean, in fact, we took part in a little Twitter challenge in February there, where we turned off our heating for a week.

Ben 28:45

We did, didn't we! Sorry I'd forgotten about that. I should have linked it in earlier. Yes, we both did that.

Mhairi 28:50

That's fine. Yeah, exactly. So that was quite interesting, because obviously it showed how stable the house was, but also showed that the heating does matter. If you see what I mean, you know, the converse is true, because obviously we did drop a couple of degrees, which is excellent, because it's only a couple of degrees over a week is really easy to live with. But also it does show that those IRs that are topping up the temperature to keep it at 20.

Ben 28:58

Did we get lucky with the weather over that week? I was just sort of thinking it. I was terrified going into it, because I thought my family will give up the second they think oh, it's a little bit cold and it'll probably be 19 degrees. They will start complaining.

Mhairi 29:30

Yeah, it was a little mild, wasn't it! But you know, it's still a test. And I think it still did prove something.

Ben 29:36

Yeah, yeah. I certainly I remember the one specific time was in the office when I was thinking oh, it's a little bit chilly because it was just approaching the lower part of 19 and the sun came out and within an hour I'd topped back up to 20 and a bit. It was lovely.

Ben 29:53

What else should I ask you? Let me just come back because I think you've done so well with this budget. So, what would you advise to other people who might be on a tight budget? And I'd like to start with people who are doing the self build like you are, you know, really getting involved.

Mhairi 30:11

So one of the things I did at the start was then I basically made a spreadsheet. I quite like spreadsheets. So that was relatively straightforward. And we basically just, every week, I would also take the bank statement, and I would be really rigorous about checking what things had cost, you know, against what we predicted they would cost, and then adjusting the things that we could buy after that, on the basis of those things. So if, for example, we spent more on screws and plasterboard and so on, then I had allowed, that meant we had less in the pot for bathrooms, and we had to maybe be a bit more inventive about materials, and choices of fittings and fixtures and so on. I think controlling it is really the only way you can cope with having a really small budget. You have to remain on top of it.

Ben 30:49

Mhairi, is that your nature, though?

Mhairi 30:51

Yes.

Ben 30:53

So you're good, you know, because I can imagine me buying something and then forgetting to write it down or whatever it might be.

Mhairi 30:59

Yeah, I'm quite a list driven person!

Ben 31:03

Martin, what about you then? Let's say someone who's not actually physically doing the building themselves, they might be looking to hire an architect and a contractor. But what can you do when you haven't got much money to play with?

Martin 31:16

Well, I think if you're considering doing any kind of self build, physically doing any work on top of hiring somebody, I think the main thing is to get your wind and watertight shell up and done by somebody else as quickly as possible. Because the weather in Scotland, for example, or even Britain, is never going to help with anything sort of dragging out. So I think, get to a point where your building's not going to deteriorate from the weather as soon as you can. And then you're sort of free to work in an environment inside of it, where you're not affected by the weather, and nothing's gonna sort of fall apart based on that. And I think that's probably the sort of biggest thing I think we tell our clients who are self building to various levels and extents. And you know, if you've only got a finite amount of money, get that done first, I would say.

Ben 31:57

Is there anything else you feel we ought to say that could be useful to the self builders, as we round off?

Mhairi 32:05

I mean, I think it's like the control aspect, as much research as you can do, you know, as you can afford to do is useful, because, you know, there are a lot of alternatives out there if you like. So you know, don't feel you have to go with the first thing that you come across. So yeah, research in terms of funding, research in terms of materials and options for construction, and just try and sort of make a sensible decision at every turn, because even the little amounts add up.

Ben 32:31

Well, Martin, and Mhairi, thank you so much for your time. As always I love just finding out about new houses and decisions along the way. So, thank you very much.

Mhairi 32:39

No problem. It's been a pleasure. It's been really nice to talk to you.

Martin 32:42

Thank you.