

HPH353

Ben Adam-Smith 00:00

This is House Planning Help episode 353. Hello, I'm Ben Adam-Smith. And this is the podcast for you if you're interested in self build or retrofit. I'm exploring what houses we should be building in the 21st century, and try to break down some of the major roadblocks that may get in our way. Coming up in this session, we're heading down to the National Self Build and Renovation Centre in Swindon, and getting a range of tips for a Passivhaus project. We often include resource at the beginning of the episode, and I think it makes sense today to be the National Self Build and Renovation Centre and this is some way you can go actually a range of moments during a self build project, I suppose you could go there, even before you're committed 100%, as a day out, you could go back to attend a course or one of their shows, and then you might even go another time just looking for something, maybe a specific piece of expertise or a certain product. So we definitely recommend that this should be on your research route, but possibly you're going to be in and out of that. So everyone you're going to hear today had some involvement with the Passivhaus workshop event. I've been a speaker at the workshops before and it's lovely to come back again, this time scarily reflecting on five years since I completed my project. But it was a fun thing and put together another presentation. So I always enjoy being part of this always. Yes, I'll do that if I can. So I thought I would take advantage of being down there to intercept a few people who are all involved in some respects with what was going on that day, that Passivhaus workshop. We'll work our way through the various pieces of advice, they won't be in any particular order. If anything, it will be random. I suppose one thing I was worried about was that everyone would want to tell me the same thing and be upset if they were last in the queue. As it happened. No, it all turned out fine. Everyone had something different to say, I suppose it depends about your product or service as to how you see this and what advice you'd like to give. So it's fine. Let's get going then I'm going to bunch them up. So we'll have a few audio soundbites together. And in our first batch, we're going to start with Anna Carton, associate at Passivhaus Homes, then move on to Gordon Bunker, owner at Worcester Renewables. And after that, it'll be Neil Turner, UK Technical Manager for Ecological Building Systems.

Anna Carton 02:32

I think my top tip would be to try and integrate the Passivhaus standard as early as possible into your project, preferably pre planning, that's the most cost effective way to do it. It's gonna save you time, both on design fees, and also construction costs, and make sure that you're heading down the most efficient route for construction from a very early stage.

Ben Adam-Smith 02:56

And what about the reverse of what you've just said, if I some way into the design process, and I suddenly liked the idea of Passivhaus, what then?

Anna Carton 03:05

So it's not impossible to convert a standard design into a passive house design, for example, after you've got planning permission, that's not impossible, it's just potentially more difficult. You might have made decisions, aesthetic decisions or you might have chosen a particular type of material that just

might introduce some challenges around thermal performance that had you known about before, you could have seen those off. So we often get clients coming to us after planning, because we produce a construction system that can be applied to any house for it to achieve the Passivhaus standard. And things that we see crop up our high glazing percentages, for example. And then obviously, you're then looking at adding on external shading, which is extra cost. So that would be one example.

Gordon Bunker 04:02

I think the most important thing is to consider all of the aspects that manage the house right at the beginning. Things like your ventilation, your heating, your power generation, how you're going to do that and engage, whoever's helping you on that side of things with the architect as soon as possible. Because how you build these into the property has an impact on how the property is built and laid out. There is a lot of equipment that's got to go into an energy efficient house and accommodating that in a sensible location, with a large enough space to cover all the maintenance aspects and things like that is absolutely key. So it should take up and it's probably going to take up potentially up to 5%, between 3% and 5% of the floor area of the build.

Ben Adam-Smith 04:47

Why does it either get left out or does it shrink?

Gordon Bunker 04:52

People seem to prioritize other requirements first, they don't even understand necessarily exactly the scope of equipment that's got to go in there. And MVHR unit takes up a square meter, you know, a hot water cylinder takes up a square meter, if you've got a ground source heat pump with a buffer tank, you've got another two square meters gone. So we've just got four square meters gone, that's one meters long, four meters wide, effectively has just disappeared, that your utility room as was. So these things need to be accommodated, in order that they can be built in a very early stage designed in so that the services can be looked after and maintained. And also, literally sort of within the whole fabric of the building.

Neil Turner 05:36

I think one of the critical elements is the importance of budgeting to do some intermediate airtightness tests. So in other words, as soon as you think that you've installed your air tight line, your membranes or your boards and your taping, then do a test before you put on any plasterboard or any other finishes. And that way, when you do the test, these airtightness testers are very experienced, and they've got equipment to be able to show you where the leaks are. So it could be smoke guns, or it could be anemometers, or it could be thermal imaging if there's a big temperature difference between inside and outside. And then what you can then do is you can then seal up these tricky areas. And it's always areas like window corners, door openings, or pipe penetrations, and you can seal those up properly. And then you then do another test and prove that they're sealed and then you can then fit your finishes.

Ben Adam-Smith 06:40

And it's probably worth mentioning now that we'll have links to all of these companies in today's show notes, houseplanninghelp.com/353. And where they've popped up on the podcast or in The Hub we'll also have links to that, for example, Gordon Bunker, he was involved with the Kinver retrofit project and

featured in one of the videos that we had, as part of our in depth video case study. So you'll get that if you're one of our hub members. We've also worked with Passivhaus Homes both in The Hub. And also Jae was on a recent podcast, and Ecological Building Systems they featured on a podcast before. So wherever we have that sort of thing going on, we'll embed it into the show notes. Let's move on to our next clips. And we're going to hear from Rob Bohm, head of Energy and Sustainability at CLPM. Then move on to Mike Shufflebotham, Sales Manager at 21 degrees. And finally, for this batch of clips, Robin Miller, Director of Beco Wallform.

Rob Bohm 07:38

To me the most important thing that a Passivhaus top tip is if you really want to go with it, because a Passivhaus is almost a lifestyle choice. It's not a case of well, this is that kind of house I would like and I would like it as a Passivhaus, you have to think it from design concept onwards. You don't take say, Oh, yes, I want a wing here and I want glass, and I want this and what that the other. And then oh, by the way, I want it passive, because if you do it that way round, it just won't work. So coming off and saying, right, number one, I want to Passivhaus, that has implications on the way it's going to be built, the size, even the orientation and the shape of it, that will have a big impact on that. So I think if you really, really want to get on a Passivhaus route, I applaud you. But it is not for the faint hearted and has severe limitations on what your invention your choices may be.

Mike Shufflebotham 08:31

Keep it simple. With Passivhaus, particularly from we do windows and doors, but the simpler the styles are kept, the less they will cost and the better they will perform. I think that goes right the way through Passivhaus. Keep it simple. It'll be cheaper, and it'll perform better.

Ben Adam-Smith 08:54

So why is that a case then when we've got a window? I'm assuming you're talking about let's say mullions and transoms and frames, all of that sort of thing. If we just have a clear sheet of glass. Why is that the case that it might be cheaper?

Mike Shufflebotham 09:07

Yeah, the simple thing is, the glass is a better insulated by long way. So the frame is the worst insulator. So the more frame you put in, the less glass you put in, that's where the difference in performance comes. But the more frame you put in and our case with timber windows is more joinery, more work, more time. So you put extra costs in to put materials in that are less insulated. And then the final outcome is it performs worse and costs more.

Robin Miller 09:40

Oh for Passivhaus it's got to be fabric first. If you get the right fabric, the right quality and the right performance it makes the rest of the project so much easier and makes your future lifestyle so much more comfortable. The building fabric if it performs well will minimize your energy requirements, it will make you feel much more comfortable and give you a lifestyle which you really hadn't anticipated before.

Ben Adam-Smith 10:04

So how do you do that, then

Robin Miller 10:06

You look at the design of the building the style of the building you want to build. Once you've got that, you can start to look at the room layouts, and the configuration. And then you can decide what is the best format for the construction. It could be timber frame, it could be traditional brick and block, it could be hopefully insulated concrete formwork, because that is one of the oldest systems in use today, and performs very well and is increasingly economic in the market today, because of the performance it provides.

Ben Adam-Smith 10:43

Now, some people might have some environmental reasons not to be so keen, but does it come into its own in any particular circumstances.

Robin Miller 10:54

It increasingly is coming into its own environmentally, although at the present time, it may not appear to be the case, because Polystyrene is a byproduct of oil. But we are using it to create a material which will save many times its own energy value in a useful lifetime. And it also actually protects the concrete structure. Now concrete is now reducing its carbon footprint quite rapidly. And by 2050, it's certainly the plot that there should be carbon positive. The big thing behind all that is the fact that the combination of our insulation and concrete into an ICF structure enhances the carbon footprint of the overall building.

Ben Adam-Smith 11:39

Robin Miller director of Beco Wallform, so we're about halfway through, this could be the perfect opportunity to hit pause, mull over what has been said so far, and make yourself a cup of tea, or shall we crack on. So we'll start with Alan Budden, architects and Passivhaus designer from Eco Design Consultants, Vassilis Giannopoulos, from Internorm. And then finally, Ben Collins from Air Flow.

Alan Budden 12:06

My top tip is to keep the shape of the building as simple as possible, which is something that we refer to in passivhaus circles as the form factor. So this is the ratio of surface area. So that's the force of roof, the walls, the area that losing heat to the atmosphere, compared to the floor area. So that helps the ratio work really well. Also, the smaller that surface area is the better performs the thinner the insulation, you need to get to Passivhaus. And the less it will cost because the external walls are your expensive bit. This is a tip that's both new build and renovation. So simple things like moving in the front door, and the Victorian terrace, you may have a recessed front door, about a meter to give a bit of rain shelter, if you move to your front door to the outside surface, that can or Passivhaus save up to 15% of your heat losses, much easier to do and to detail than to build and all the rest of it as well. So there's lots of advantages. So keeping that shape is probably the best thing. So taking out that integrated garage we say downstairs, all those sort of things. So keeping it simple, easier to get airtight at as well. Easier to put the insulation on. Just easier all round, I think and saves money. So win win win!

Ben Adam-Smith 13:19

But not boring?

Alan Budden 13:20

No, no, I think there is a risk of that. And in fact, we helped write a document for the NSB foundation on shape and form where we looked at that as one of the topics. So I think you can play around with materials, you can do all sorts of things with the design of the building to make it look good. And to be honest, simple classical shapes can also look good if you get the proportions, right. So it doesn't need to look boring, you can still have fun with the materials and shapes. And even if you do really get something really wacky, put into design PH, and you can do some really wacky shapes and do things with it and still relatively keep the form factors relatively good, you'll still be okay. Okay, you might need to do a bit more insulation on the walls a bit thicker, but you can still play around with those shapes and do stuff it doesn't need to constrain you completely. But at least if you're measuring it, you can know what it is and you can work with those constraints and use it and decide those options.

Vasilis Giannopoulos 14:16

When you go in the market for Passivhaus windows, always focus on the frame of the windows. It's going to be easy for any window supplier to match the performance specifications you have or the glazing units. So please focus on the quality and the performance of the frame. And having said that, when you actually focus on the frame, ask yourself a question. Where is insulation? If you cannot spot the insulation of the window frame, then think again, it might be potential big problem. Try actually to figure out, try to spot where the insulation of the frame is, what makes the frame of the Passivhaus window as insulated as it needs to be for Passivhaus projects in order to minimize heat loss and in order to increase the longevity of the product.

Ben Adam-Smith 15:05

Do we need Passivhaus certified windows?

Vasilis Giannopoulos 15:08

If you have certified Passivhaus windows, you simply get the assurance that the window does what it says, okay, so the performance of the technical identity of the window is assured by The Passivhaus Institute that yes, it delivers what the manufacturer says, okay, strictly speaking, you don't need the window to be certified.

Ben Adam-Smith 15:30

And obviously, when we come to look at Windows we may not have had experience before. So how do we know to assess a good window?

Vasilis Giannopoulos 15:39

Continuing on what I said before about the insulation of the frame, for instance, if you, if your preference has to do with composite windows, the vast majority of the composite window manufacturer in the UK they do the basic thing. So they have the aluminium cladding goes externally, they have the timber part of the window, of course, internally in between, there is nothing else, but just another layer, okay. And this is part of the problem. Make sure for instance, when you go to the market for composite

windows that you can easily see between the aluminium cladding, and the timber part of the window an insulation layer. It could be natural insulation, could be EPS could be lots, lots lots of things, what is really, really important that you can see the insulation there, not just plain atmospheric air, not just another layer between the exterior part of the window, aluminium cladding, and the interior part of the window, timber for instance, that's really, really important.

Ben Collins 16:33

My top tip speaking on behalf of ventilation probably puts as much thought into the planning as you can. Start looking at potentially what you want to achieve, the possible add ons obviously for a system, speak to whoever is going to be doing the install at the beginning to get an idea of obviously, what their experiences were. There's a lot of different products that are out in the market, there's a lot to choose from, and they all offer different features and benefits. Also look at the additional add ons. So for example, different things that can be bolted onto the system to effectively bring the cost down even further when it's actually installed. These are things that again have to be bought in at an earlier stage. But it can offer great benefits and rewards to the end user.

Ben Adam-Smith 17:19

Two themes that come up a lot on this podcast actually. Making a lot of good decisions early on helps things and also we heard embracing simplicity. And episode 350 that we recorded recently was all about doing more with less, which very much leans on those two principles. So we'll link that into the show notes as well. And we're onto our last set of clips. We're going to hear from Iga, architect and Passivhaus Designer at ACA (Allan Corfield Architects), talking about budget. No-one's mentioned money. That is a key consideration when we're setting our energy performance. We've also got Paul Jennings from Aldas, who have featured on the podcast many times before, air leakage expert. So what will his top tip be? And then a guy called Ben Adam-Smith from House Planning Help

Iga Panczyna 17:37

We will certainly ask you for your budget. So quite often, this is the key driver when it comes to building your future home. And from that point onwards, we can then guide you on you know whether it's worth investing in a Passivhaus. From from my perspective, I'm a little bit biased, because I'm an Passivhaus designer, I would say always go for it. But yes, we need to consider our clients budget, their aspirations and you know, long term plans for the future. And the Passivhaus fits in all of those criteria. So we certainly can provide you with that knowledge and reassurance of you know, designing a low energy home that will provide you all the benefits of you know, having that comfortable living environment.

Ben Adam-Smith 18:23

Will you encourage people to do a bit less but better, because if they come in, and they want to get to Passivhaus standard, but maybe they don't have the funds for what they desire.

Iga Panczyna 18:34

Yes. So what we tend to do, we take a balanced view on it. So we listen to our clients what they want to achieve, and we not necessarily will be pushing you to get a certification, we will be discussing with you the budgetary constraints, and so on and so on. And quite often, if you just follow the Passivhaus principles, which is a fabric first approach principles, you can achieve a really really good result without

you know, going to the extent of certification. So we certainly have that as an option. That balance kind of approach.

Paul Jennings 19:08

My top tip is plan ahead, prepare, practice, look at what you're doing, think about design, look for joined up-ness, is your airtightness line consistently joined up? Is it practical? If you're doing any sorts of fancy tapes, you're doing preformed corners, practice, don't practice on your build practice before you get to your build.

Ben Adam-Smith 19:30

So all of these sorts of things at what stage let's say we're working with someone do we need to consider?

Paul Jennings 19:38

Well the earliest stage is the design stage. You're looking at have you gotten continuous airtightness line? Are there any issues? Can you simplify it? Can you make sure your tapes will work on your membranes or work. Personally I now go away from large amounts of membranes I use the airtight OSB because I think it's much more robust, but not always the case. And, you know, essentially there were good tapes, and there were better tapes, but mostly it's about workmanship, who's doing it? How well are they doing it have they practiced?

Ben Adam-Smith 20:10

I think my top tip would be, don't mess with the formula. So if you're tackling a Passivhaus, do all the things that are suggested, follow the process, because it's strange how often you meet people who don't like a certain bit of it, and want to go off piste and do their own version. And it just doesn't work. So it's almost a holistic approach. So that's one reason that I quite like certification, because it shows that you've done all the bits, and that it should work at the end of the process, because it's a quality assurance process. Oh that Ben Adam-Smith Guy sounded really knowledgeable, didn't he, I thought I'd throw you in a bonus tip because I was there too. And I was a speaker. So I thought I would chip in as well and round us up to 12 tips. Of course, there is always more more to learn on our website more to learn with the National Self Build and Renovation Centre. And all of the companies that we featured today. Thank you so much. Find out more in the shownotes houseplanninghelp.com/353. My call to action is to check out The Hub. And this is the membership community that I run alongside House Planning Help for further support. And it does work particularly well in the early days. So you can sit at home when you've got some spare time, load up login, and then watch maybe one of our in depth video case studies where we've been filming through entire builds, just to try to work out, condense down into little nuggets, what is going on here, what decisions are being made, why do I agree with them? Then we've got our courses. We've also got our live training sessions with guest experts. We've got ask the experts so you can fire questions that people love than me but I am here each week as part of Office Hours, which is a drop in call. And then we've got our members only forum. So find out more houseplanninghelp.com/join That's it for today. Thank you so much for being there. The House Planning Help podcast is produced by Regen Media: content that matters.