

Episode 58

Does it Cost More to Build a Passivhaus?

The show notes: www.houseplanninghelp.com/58

Intro: Let's get to today's interview and it's with Chris Parsons from Parsons + Whittley. I've seen him give a number of presentations, including one recently for Encraft at their Passivhaus conference [and] also the Chartered Institute of Builders. I'm always impressed that he manages to find time because I know he's busy. I've tried a number of times to organise this interview and our schedules haven't quite matched up. Luckily though he's been nominated for one of the UK Passivhaus Awards this year. That's where I bumped into him last year. So we're going to talk about that scheme a little bit [and] also the costs of Passivhaus. It's a question that I imagine you have thought of - *Is it going to cost more to build a Passivhaus?* Well if it does, how much more? And is it a sliding scale? And what does it depend on? So we're going to get into all of that.

However, I started by asking him for a bit of background and how he became interested in sustainable architecture.

Chris: I think really the practice has always been interested in making sure that we build the most efficient buildings and obviously with the issues around global warming we're looking at carbon emissions and we combine both of those I suppose, which is probably what lead us towards the Passivhaus solution because it seems to address both of those issues.

Ben: You've had a number of Passivhaus schemes that have gone on site and I'm sure those examples will come up but in terms of costing where do you start. Are you always expecting it is going to cost more to build a Passivhaus?

Chris: I think I'm probably going to introduce a couple of quick qualifications if I may because one thing that's important to remember is Passivhaus, the haus being the German word for building, means that you can deliver Passivhaus both in domestic houses in the English sense but also in any other building and the reason that I introduced that qualification is because the larger the building the more efficient form factor you have the less impact there is on cost. So we can deliver medium to large sized buildings probably with not much impact on cost but in terms of the projects

we have delivered which have generally been domestic dwellings in the social housing arena where they are quite small there is always an impact on cost.

Ben: Have you found that since your first scheme the costs have come down. What was it that might first send you over?

Chris: We have found that we have changed the costs sometimes down sometimes upwards, so that's not helpful and actually I'm going to correct myself here we've changed the price we pay because it's not quite the same as cost. The reason that I make that distinction is that it largely depends on how you procure your work as to how much information you have about the actual cost of a Passivhaus is.

The things that obviously make a difference, so when you sit down a sensibly analyse why should this cost more we are putting in more insulation, we are using more expensive windows and doors and we are going to use a mechanical ventilation system with heat recovery. On the negative side we will probably have a slightly simpler mechanical infrastructure in the house because we don't need quite so much traditional heating. So those three factors definitely add cost and then there are elements I think around the quality of the workmanship which I always have some doubt about arguing that that increases cost because we should be having that level of quality in all of our buildings but in truth we don't get that in all of our buildings so there is an additional cost in delivering the quality necessary for Passivhaus. Then there is the requirement to address airtightness and again some of those products, not horrendously expensive in the scheme of things but you can't argue anything than they will add a little bit more cost.

Ben: Even if this does cost more, are we getting more for our money?

Chris: We are definitely getting more for our money. As I mentioned earlier about the quality of the workmanship for example, that shouldn't be an extra cost. In strict accounting terms I don't think that should be an extra cost for Passivhaus because we really ought to be pushing the standards in our ordinary building. I suppose to some degree we are beginning to see the building regs trying to catch up and I think they are making great strides in trying to bring the differential between Passivhaus and standard construction, they are trying to reduce that differential.

Because we are getting a better quality building we are definitely getting a building that will use less energy and particularly in the

area that I work in terms of delivering social housing addressing fuel poverty is a big driver for us doing Passivhaus because we really need to address fuel poverty. We all know that fuel is only going one way in terms of price so everything we can do to use less is very sensible. I think, as well, reducing the amount of fuel that we use reduces the amount of carbon emissions so that's a benefit for society as a whole. There are also benefits for the long term maintenance of the buildings because we've built to a better quality and we've used better components, we're getting a building that will cost less to maintain and the final point that I think you ought to add into the mix is that we are probably delivering a more comfortable and more healthy environment for the occupants and that shouldn't be overlooked. We like to think that we ventilate our buildings fine at the moment but actually there is some evidence to show that we are under ventilating nearly all our buildings so actually something which positively addresses air quality is another plus.

Ben: Listening to all of those points that you brought up they are all benefits for the occupants. I would like to think that if ever I build something you would want to build something good for the occupant. There are no incentives there for the company which might be doing this and interested in money. Is that always going to be a barrier to wide scale Passivhaus adoption?

Chris: I think there is the potential for that to always be an issue because particularly in the UK with the way we have organised our housing market the capital cost is divorced from the running cost. As a consequence it does get quite difficult to justify to a house builder, for example, that he ought to be building to the Passivhaus standard, so I think we need to move the thing forward through legislation. As I mentioned earlier about raising the ordinary standard, building regulation standards, that would help to reduce that differential so that might start to encourage people to consider the additional expense.

I think again just referring to the social housing arena my clients have noticed that they have fewer rent arrears and they have fewer void properties in their Passivhaus schemes. Too early to say hand on heart that is definitely because they are Passivhaus but I think our belief is that by providing people with a really comfortable environment that doesn't cost them very much to run they don't want to live in anything else.

Ben: In terms of cost this might be a good point to bring in some of the example projects that you have worked on. The very first one, is that the one that cost more percentage wise? Has it worked like

that or is there a very static percentage that you think it is costing above a traditionally built house?

Chris: That's an interesting question, Ben. The very first Passivhaus scheme we were involved in was the Wimbish Passivhaus scheme - 14 dwellings down in Essex. It was interesting because the construction industry hadn't really delivered Passivhaus in that multi-unit arena before and as a consequence procurement became quite a challenge. We worked hard to try to find contractors who were interested in delivering Passivhaus and we then narrowed that down and eventually placed a contract with somebody, Keepmoat actually. We did a cost exercise against another 14 unit Code 4 scheme and the difference was about 12%. So we paid about a 12% premium on the very first scheme.

We then negotiated the second Passivhaus scheme that we did, the Ditchingham Passivhauses, with the same contractor but it was at a time when the housing market wasn't particularly buoyant and I was a witness to the negotiating techniques and we managed to secure that for a 6% increase. So that would indicate a downward trend, which we were quite happy with. However I think that during the course of the project we realised that maybe that was more to do with negotiation than actual cost and my more recent schemes have generally been shown to be around the 12-15% uplift again, so I think if I was to have to draw a conclusion I would say at the moment we are paying around about 15% more for a Passivhaus scheme over and above the standard we would otherwise deliver.

Ben: Will that change from company to company? Is that just how you are constructing?

Chris: It will change. As I mentioned right at the start there is an issue around form factor so remember I am talking about small houses which do push the boundary in terms of what we need to do with the fabric. It will also change, I think, depending upon exactly how you procure the work because remember I'm always talking about a price when I mention those figures and not cost so I talking about what we have paid a contractor to do that work.

Ben: Can you explain that a bit more? Sorry, price and cost? I was thinking, hold on, what, what?

Chris: Well the construction industry is an interesting place to work for a number of reasons but the issue is that all of our schemes have been procured using a design and build process. What that means is that we've designed up to a planning stage for those buildings

but we haven't put any detail as to how we are going to achieve the standard at the time at which they obtained the build price. So a contractor will have come in, looked at my planning drawings, and sucked his thumb to some degree and said how much I will want to deliver that to a Passivhaus standard. In the early days, of course, he will have done that without any knowledge as to how to deliver to the Passivhaus standard because there's not enough experience out there. So I suppose what I'm saying is the difference really between cost and price is largely a contractor's risk premium. He will have looked at that project and thought I think I can do Passivhaus for x but there is a risk here so I want $x + y$ and I'm only talking about the result of $x + y$ because I don't have enough information to get down to the x figure.

Ben: I know that we have discussed this risk factor is what ends up pushing up the price so is that something that eventually we can take out of the equation?

Chris: I think there are ways that we could possibly take it out of the equation. Again it's about everybody's attitude to risk because there is always risk in a building project and so it is really down to who is prepared to take that risk. If your client, for example, is prepared to take the risk then he can take the risk premium out of the contract because now the contractor has no risk and you simply pay him for what he does. Of course if the risk occurs then your client will have to pay that cost so we can take the risk premium out providing the client is prepared to take that risk.

Ben: In one of our episodes we talked about eco-minimalism, this concept that you can create a Passivhaus by working backwards almost and starting with the essentials the building blocks that you will need, you know that you will need the insulation, the triple glazed windows etc. the ventilation and then creating a building with the rest of that money. Is that a way to get closer to things costing like for like?

Chris: I think that the essential principle probably that you are referring to there is absolutely starting with keeping it simple. I think that if we keep everything as simple as we can then we should end up with a cost effective Passivhaus. I think there is a tendency to overcomplicate what we try and do, not just in Passivhaus actually but in some of our code for sustainable houses. They've been quite complex in trying to tick various boxes.

I think what I like most about Passivhaus is that it does just come down to a set of numbers at the end of the day. So as a designer

you can start with a pencil sketch, run it through the software, make sure that you are somewhere near those numbers and then continue to develop the scheme. Every time we've done that simplicity has been the easiest way to achieve the target.

Ben: For you and I simplicity is a given and sensible but is that going to appeal to the mass market?

Chris: Yes don't confuse my use of the word simplicity with boring. I think that, I suppose what I'm talking about is just not getting carried away with the intricacies of how to put a building together so I'm talking about simplicity in terms of detailing, I'm talking about simplicity in terms of how you use the space. To some degree we probably don't want to add on too many visual adornments, if you like, because they have a tendency to introduce thermal bridging but I don't think that necessarily needs to mean that the buildings are unattractive and I think that one of the things that we have done as a practice is to try to develop Passivhaus in a more normal, if you like, more English tradition more traditional vernacular, I suppose, and I think that we've been reasonably successful in doing that. We've done a number of Passivhaus schemes in conservation areas, in Areas of Outstanding Beauty etc. and even won awards from planners from them so I still think that you can make them very attractive but keep them simple in terms of the philosophy.

Ben: Do you foresee a time that a Passivhaus standard house will be worth more? It's difficult at this stage because there haven't been that many built but then that would add an extra incentive for going the full distance and paying that extra.

Chris: Yeah I think I do see some movement towards a greater demand for Passivhaus or for low energy buildings or for low running cost buildings. We work as well as Passivhaus work, we work for a number developers, we work generally in the construction industry and just in our own experience of clients walking through the door looking for a building there is definitely a greater awareness that we can deliver very low energy buildings and therefore I'm being asked for them. I think it's that demand which will probably provide the answer your question. We have to make sure that people ask for the product and recognise the value of it and at that point, I think, we will get to the stage where you can start to charge a premium for being able to deliver that extra performance. Certainly my understanding is that that is the case in Europe where people talk about a 3 to 5% premium for the delivery of Passivhaus and I think the key to it however will be certification. I think if I was going to pay

some extra money for a Passivhaus, I would want to be sure it was one so I would like to see certification adopted as a means of quality control and a means of quality assurance, I suppose, but yes I think the public actually is more aware than the media and the house building industry currently understands.

Ben: Are there any other aspects of cost that we should bring in to round off this conversation?

Chris: I think simplicity again, simplicity of detailing will help to reduce the cost. Simplicity of the mechanical services all help to reduce the cost because as I mentioned right at the start we've got these factors the insulation the windows things like that which are more expensive than in our normal housing. I think we need to counter that with being sensible about how we use them, where we put them, understand their contribution to the performance and therefore, I suppose, what I'm coming down to is the skill of the designer can actually help to reduce the cost of delivering Passivhaus by absolutely understanding what the sensitivities are, not over egging the omelette, using exactly what is necessary to deliver the performance standard so I think probably get yourself a good architect.

Ben: Well just before we conclude I know that I've seen a couple of your presentations and you have often had some interesting occupant feedback, so maybe that's where we can finish up looking at some of your schemes and just going through some of this.

Chris: OK. Yeah it's been very interesting. I think Wimbish in particular was our first scheme, as I mentioned, and we were lucky enough to get some money from Technology Strategy Board to carry out some post occupation evaluation. And as well as that my clients Hastoe Housing organised a monthly seminar on site where we would introduce Passivhaus to other architects and other housing associations. So we've had the opportunity to meet the tenants on a frequent basis, every month or so and they've given us some tremendous feedback. I think one of the ones that sticks in my mind is the young lady who in her first year, first few months there had been putting away the same amount of money as she had in her previous home and said to us: "This is tremendous. If this carries on like this, my children will be able to have some Christmas presents." A little tear appeared in the corner of my eye! And then she said: "If it really carries on like this we will be able to have a holiday next year." So that's very heart-warming, I think, when you hear that and indeed that proved to be the case.

We had a lady on BBC television [who] confirmed that her gas bill is £120 for the year so that's good, but I think as well the same lady said to me she had been for a fortnight's holiday to stay with her mother and really decided that she never wanted to live in anything other than a Passivhaus ever again. So we know that we are delivering good quality buildings, we know that we are delivering comfortable buildings and we are delivering buildings that are cheap to run. That kind of confirms that we are doing what we set out to do.

Ben: Well Chris it's been great to have a chat. Thank you very much.

Chris: OK, thank you.