HOUSE PLANNING HELP

Episode 289

Retrofitting period properties – with Roger Hunt

The show notes: www.houseplanninghelp.com/289

Roger: Back in 2008 we published Old House Handbook. When we wrote Old House Handbook, things like retrofit weren't very high on the agenda at all. We didn't think about insulation and so on. I think there's a page where we talk about insulation, amazingly. Very soon afterwards people started thinking about energy efficiency and so on in buildings.

So, we then decided that really we ought to write another book to complement the first one, and they are complementary books – Old House Handbook is very much about repairing old buildings; Old House Eco Handbook is very much about the whole energy efficiency and sustainability side because it all goes hand in hand. You need to make buildings sustainable in the long-term. It's not just about cutting heating bills and so on.

We decided we ought to write this second book. It was quite a challenge when we first wrote Old House Eco Handbook because it was all fairly new. People weren't really understanding how you should retrofit an old building to make it energy efficient and sustainable. So, we had to do quite a lot of digging, had to speak to a lot of people and learn quite a lot and challenge people quite a lot.

So, we wrote that book and it was very successful. Old House Handbook has been a bestseller; Old House Eco Handbook has equally done very well. And we realised that we really needed to revise it and bring it up to date because we've got new thinking on how we make buildings energy efficient and we've also got a lot of new materials coming out. There's been a great surge of materials for insulation and draft-proofing windows, secondary glazing of windows and all of those sorts of things. They've come quite a long way and all those products are now much more available than they used to be.

We needed to include all of that in the new book so, that's really where we've come to now.

Ben: What do you think about the progress that we've made? Because in some respects it seems like we've done very little before we even focus on just period properties, retrofitting as a whole.

Roger: I'm very sad about the way things have gone. I remember going to a conference up in Manchester shortly after Old House Handbook was published and it was the big thing about we need to retrofit, I think it was, a city the size of Coventry every week to meet the targets we needed to meet.

We're nowhere near that. We haven't scraped the surface. We are so far behind in terms of retrofitting old buildings that there is absolutely no way we're going to meet the targets we need to meet as far as I can see. And we can't build new homes to solve the problem because we can't build them quick enough; there isn't the land to build them on. And the environmental impact of knocking all the old ones down to build new ones isn't sustainable either.

So, we have to retrofit old buildings and I think it can be done in a way that doesn't wreck the old building but at the same time we can reach very good standards of energy efficiency and the long-term sustainability of those buildings.

Because a lot of those buildings are built very well and they're quite solid and we've also discovered in research; the SPAB – the Society for the Protection of Ancient Buildings – has done research that has actually discovered that the way old buildings were built, the walls and so on, are actually much more energy efficient than we originally thought they were. So, it's important to keep those old buildings and make good use of them in the future.

Ben: Shall we define what buildings we're talking about here first?

Roger: We're talking about everything from a medieval house right through to Victorian and Edwardian terraced houses. What we're really talking about is buildings that are built with lime mortars, lime renders, lime plasters so they are breathable buildings.

That building technology changed around about 1919 from breathable construction to a construction that was very much about keeping water out, using concrete, cement and so on to build buildings with. And it's important to actually understand that change in building technology and building construction because we need to treat those buildings very differently. This has a big impact. If we get the retrofit techniques wrong in a breathable type of construction, we are storing up problems for the future in terms of

damp, condensation and all sorts of things that are going to make those buildings unhealthy.

So, we need to think very carefully when we approach a retrofit of an old building.

Ben: The process of doing this, can you lead us through how you might begin and what it's going to entail as you carry out the work?

Roger: With any retrofit, you need to think about the whole building and everything you're going to do. You might not want to do all of those things at first; you might want to only do certain things. But it's important to have a roadmap that you might be doing the things you're going to do over five or ten years even.

If you don't think about those sorts of things there can be unintended consequences and you will get condensation and poor air quality in the building if you don't think carefully. For instance, if you start draft-proofing windows and draft-proofing floors and so on, you're going to cut down the air movement in the house. So, you do have to think about controlled ventilation going forward.

When I talk about controlled ventilation, it might just be opening a window for a controlled amount of time or it might be some mechanical ventilation system. But just sealing up all the drafts is not going to solve your problems. You're just going to create a whole set of new problems. So, it's really important going forward to think about how you solve those problems and make sure that they don't become real issues and make an unhealthy building that's actually going to cause problems for the building and also the health of the occupants.

Ben: Is there an optimum airtightness? I'm imagining that the ventilation strategy for a lot of these buildings is not going to be mechanical ventilation. Or is it perhaps very simple, extract only or anything like that? Because as you say, you need some ventilation and opening the window doesn't seem like that should be our solution in this day and age even if you are living in a period property.

Roger: You are, I think, inevitably going to need some sort of mechanical ventilation. Certainly, in bathrooms and other wet areas. So, the kitchen and all bathrooms, you should have some sort of mechanical ventilation.

Heat recovery systems don't necessarily work well in old buildings because even if you do as much draft proofing and so on as you can, you are still likely to have some air coming into that building. So, you can't really necessarily work with a whole house system

that has heat recovery. Even so, it is worth looking to see whether that is a possibility but I strongly emphasise that you must have that controlled ventilation which is a fan coming on.

And it's important to understand what's actually happening with the building and how much uncontrolled ventilation there is in an old building. If you think about the floorboards in the average sized room, if you add up all those gaps where the air is coming in on the ground floor, that can equate to a small window being open. So, if you can at least plug those gaps between the floorboards and you do maybe open a window when you need to open a window for fifteen minutes and close it again, you're creating controlled ventilation rather than that uncontrolled ventilation.

It's important to remember with drafts that actually, they make you feel colder than the building really is. And actually, on a cold still day, you can still feel warm in a building whereas on a windy day which is maybe a warmer day, you can feel much colder. And it is the effect of those drafts coming in. So, drafts are actually as important as insulation in a building for that comfort level.

You find with windows, there is a zone around the window that hasn't got draft proofing or hasn't got secondary glazing where you actually don't want to sit near that window. So, the size of the room decreases because everyone moves away from the windows because it's uncomfortable to sit near the windows. So, introducing secondary glazing or draft proofing to a window can make a lot of difference to the comfort level of that room.

Ben: We're still using a lot of the principles that if we were starting from scratch, we might be. But is there a certain type of person who's going to make sure that we don't create this environment that's actually just unhealthy in a different way?

Roger: I think the problem is, you can't just easily find someone who's going to come in and advise on these sorts of things. It is fairly limited. Unless you employ an architect with the skills that are needed to understand how old buildings work and also how to retrofit old buildings, it may be challenging for a lot of people.

But there is an awful lot you can do, very simple measures that you can do, like blocking up the gaps in the floorboards which is a DIY job. You can insulate your loft which is a DIY job. Those jobs you can do over a weekend. And secondary glazing on windows is a job that you can do yourself or you can get a company in to do it.

So, there's an awful lot we can do. Those relatively quick fixes that are going to make a huge amount of difference to our comfort in our homes and the way we live our lives.

Ben: There's a certain amount as well that if you're not repairing your building then it can become even more inefficient.

Roger: Yes. Maintenance is the big key to old buildings. I referred to the SPAB – the Society for the Protection of Ancient Buildings – earlier. They run something called National Maintenance Week and National Gutters Day because the biggest problem with old buildings is water. If you have a blocked gutter, the water spills down the wall and a wet wall is thermally inefficient. So, it becomes a very cold wall. So, if you can keep your walls dry, you actually make the whole building feel warmer.

So, it is really important to maintain your buildings. And from a sustainability point of view, maintenance actually saves money and it saves waste. Because if you don't repair that slipped tile or slate on your roof, you will find that the water comes in and that water will start rotting timbers. It potentially will come through the ceilings. So, you end up with a repair project that is going to cost money. It's going to use materials, it's going to use plaster and extra timber, it's going to involve a builder coming in his van and using diesel to get there potentially. All of that is unsustainable. So, the more we can do to maintain our buildings, the better it is for everyone and for the environment as well.

Ben: Is one of the ways to make the most of it – we've mentioned about sealing up your buildings and that you've got to be careful there, but combining this with renewables, is that something that you're in favour of for heating, for example?

Roger: Oh, I think we've got to start looking at renewables for heating. Gas boilers are potentially going to be outlawed and we really do need to find other ways of heating our homes.

First of all, obviously, we need to cut the energy use. You should always cut energy use before you think of heating solutions and lighting and so on, things that are going to use energy. You want to think about how you are going to insulate your home, cut the drafts, increase daylight and all of those sorts of things. But then renewables are an essential part of that, or certainly using heating and so on that doesn't create carbon.

So, a lot of old buildings you can incorporate solar panels somewhere. It is possible to get them on the roof. It is also possible

if you've got a garden to have a solar array in the garden. If you've got outbuildings you can have a solar array. Or you can think about air source heat pumps which are a good way of heating, or ground source heat pumps. But you also need to think about how they're actually going to work with your old building because if old buildings are leaky in terms of air, ground source and air source heat pumps tend not to work as well.

Everything goes hand in hand. As I said at the beginning, you do need that roadmap. So, you have to think of the best solution for heating combined with all the other things you're doing. So, an air source heat pump is not necessarily going to be the solution until you have tackled some of the other issues with the building.

Ben: So, fabric first.

Roger: Definitely fabric first and minimise the use of energy in the building first.

Ben: When have you actually gone too far? We talked before and I remember this, that you'd been to see Passivhaus retrofits and so forth. What is too much? Is that down to the person who owns the house? Is there a blanket ban on doing too much? Or is it just that you can do that if you do it well, that's one thing, but what happens if you do it badly?

Roger: I think doing it badly can be pretty disastrous because if you use the wrong materials, and I'm talking about using insulation materials that aren't breathable and create condensation, you can actually end up with mould in the walls and a real disaster. I've seen some real disasters in buildings that have been done badly. So, it is vital to think about getting it right.

Iin terms of Passivhaus, when we spoke last time, EnerPHit wasn't around. EnerPHit is the passive package for retrofits and I think that has now allowed the passive approach to be brought into older buildings. It's not easy and it's not cheap to do but I have seen some EnerPHit projects that have been incredibly successful and have created a very energy efficient and comfortable environment.

So, it can be done but reaching those sorts of standards is probably not going to be cheap and you will need an architect or other specialist who really knows what they're doing to reach those sorts of standards.

Ben: I keep coming back to thinking about the occupants and when you move in initially, what your expectations should be, can you go in wanting that high efficiency, that high comfort, or are you really

almost trying to get the building to where it wants to go? Does that make sense?

Roger: Well, I think it very much depends on the building, of course. A Victorian terrace is far easier to tackle than a medieval hall house in the middle of the countryside. So, every building is different. And even in one terrace, buildings can be different. So, you do need to look at that building.

I think it's really important to remember that if we buy an old building, we're buying it usually because we love it for its character and its patterner of age and textures, all of the things that make old buildings special. So, coming in and doing a retrofit that is going to smooth out all of the surfaces and take away that character is actually in some ways not sustainable because it's going to destroy what we loved and what is special and what makes us feel good.

Part of sustainability is about feeling good and if all old buildings were to have insulation on the external elevations and to be rendered over, we would make all of our cities and landscapes look the same and we would lose that sense of place and we would lose the sense of landmarks and all the things that help build communities. So, I'm passionate about trying to make buildings sustainable and cut our carbon but at the same time we've got to have places that are accessible, enjoyable and important to people. Because community actually leads to sustainability as well.

So, it's a very complex subject but it's got to embrace everything because we've got to keep the value of our buildings in terms of their beauty, aesthetics and our love for them and the value in terms of pounds, shillings and pence. It is all part of it. So, it is going back to that balance and it's about having that long-term vision which is important.

Ben: You've mentioned about that big investment sometimes that you have to make. Is there an argument perhaps here of not doing so much, waiting until things are more defined? Because when you do a big retrofit, you want to get it right.

Roger: Yes. I think we're reaching a point where we have a lot more idea now about how to get it right. So, I think in all respects, in terms of insulation materials, we're much more knowledgeable than we were even five years ago. I think in terms of renewables and so on, we have a much better idea of how they're going to work and there are some really good systems out there now.

So, I think we've reached a point where you can embark upon a retrofit and not have the doubts that you maybe would have had five years ago. And we've got that learning there. So, I think there is no reason that you shouldn't dive in now and do it.

And I think it's important to remember, a retrofit starts with just changing all of your lightbulbs from incandescent high-energy lightbulbs to LEDs. That is something you can do in an hour or so. It's not going to cost you a huge amount of money and you're going to get your money back in a very short space of time. So, those quick fixes shouldn't be overlooked and you shouldn't wait to do those. And as I said, loft insulation and so on. Those sorts of things can be done very easily and will really start making savings for you immediately.

Ben: Are there any don'ts in this conversation that might be worth signposting?

Roger: Don't rush in, which is what I would say with any old building project, not just in terms of retrofitting but in terms of tackling an old building. It is always worth living in an old building for a year, through all of the different seasons, so that you actually understand where the damp patches are, where the light comes in. It's going to help not just with the bigger things but also when it comes to interior decoration. You're going to understand how you should decorate that building.

I think the other don't is to not try to use modern materials that are incompatible with an old building. Because if you start using those materials, you are going to be ripping things out in ten or fifteen years' time because you've got mould, condensation and big problems.

I think also you need to do your research and really talk to people. Go to lectures, go to events, look at products. Don't believe everything that you find on the internet. Cross-reference everything to check that it is the solution. And don't start using an insulation material that is going to stop your building breathing because that is really vital. There are products out there now that are going to allow an old building to work in the way that was intended in the past.

Ben: Resources? Other than your book, obviously.

Roger: I think there are quite a lot of courses around now for these sorts of things. There is the Retrofit Wheel which is from the STBA which you can find on their website.

Ben: I remember that. It's quite complex!

Roger: It looks very complex but actually you feed in all of your information about your building and it then looks at what you're trying to do and you can see where you've got the unintended consequences which is the big thing that I've been going on about, that if you draft proof your windows, you're then going to maybe get condensation. Or if you put in insulation, you're going to end up with condensation on the window reveals because you haven't insulated the window reveals. All of those sorts of things.

So, that Retrofit Wheel is a really useful tool to use.

Ben: Thinking about your book, as you put the 2012 version or whatever it was next to your current edition, could you see any big changes there?

Roger: I think one of the biggest changes is that we've now got a whole chapter, a new chapter, devoted to retrofit materials. I think that is the thing that emerged that we didn't really have enough to put in there if we'd had that sort of chapter when we did the original book.

That is insulation materials – it's amazing how many insulation materials there are. I had little packages coming from all over the place with different insulation materials to photograph. Also, all the various tapes you need to seal up gaps and membranes and different materials, different retrofit products that are out there now that were in their infancy when we wrote the first book.

Ben: Finally, I'm going to relay back what I think I've understood here. So, actually it's the same approach as for any energy efficient build but you've got to take into account your existing building and you've got to look at it as a whole to work out exactly what your strategy should be. And then fabric first, renewables later. Have I roughly got it right? I just thought that would be interesting.

Roger: I think you've summed it up very well there. I think the biggest thing is yes, you want to cut carbon and you want to be energy efficient; they are really, really important and there is no doubt we've got to do those things and I'm passionate that we have to because we've got to pass these buildings on to our future generations and we haven't got very long to do it. We really, really need to do it very quickly. But at the same time, we mustn't destroy what we love because if we do that, what sort of world are we going into in the future?

That is the balance you have to strike. It's not an easy balance but I think with perseverance and careful thought and planning ahead and doing a bit of research, you can achieve that.

Ben: Roger, really nice to catch up once again. Appreciate your time. Thank you.

Roger: Thank you very much, Ben.