

Episode 258

Using a turn-key design and build company to deliver an ecological home – with Neil Sutherland

The show notes: www.houseplanninghelp.com/258

Neil: I don't have a conventional architect background, you might say, which is probably a good thing. I'm one of these characters who left school at sixteen because I didn't show much promise. I'm actually dyslexic, not unlike a lot of other creatives, I guess, if I can call myself that. So, I struggled a bit. I'm in my mid-fifties to give you some kind of idea of my schooling period.

So, I undertook a technical apprenticeship actually, with an engineering company. I was very lucky to get an opportunity with that. And that essentially was around manufacturing, production and engineering. I undertook that for four-and-a-half years. It allowed me to grow up a bit, run around with money in my pocket and that type of thing when I was a young lad.

I got kind of tired of that when I got into my twenties. So, I finished my apprenticeship and hit the road for three or four months. I ended up right through Europe really, wearing my kilt – you can probably tell. I have reason to do that. And the romantic bit is that when I was walking down the street in Florence, I found myself gazing at buildings wondering how on earth somebody could actually manifest this kind of stuff.

So, I decided to come back to Scotland and go and study architecture, which was a complete revelation to my family. They expected me to go into something with engineering. But I decided to pursue that. I was incredibly fortunate to get straight into the course in Aberdeen at the Robert Gordon Institute of Technology, as it was called then.

I undertook my architectural training and I was again incredibly fortunate. I was able to secure an exchange programme to the Illinois Institute of Technology in my third year. So, I ended up in Chicago for a year and I was exposed to a lot of wonderful work by the likes of Frank Lloyd Wright, Mies van der Rohe, and others. That really set the scene, I think, for what I've ended up doing really.

So, just to wind on a little bit further, I finished my studies eventually with more travels in China and Tibet and things, and I did something completely reckless which was to set up an architectural practice or a design practice immediately after finishing my studies. And you don't do that kind of thing, particularly if you want to be an architect. But I was never really driven by that. I was more driven, which I guess will come out in this discussion, by the desire to make wonderful places that change people's lives rather than the profession of architecture or any other standard stuff around a career and all that kind of stuff. I've never really been interested in any of that.

The other key things I suppose, to give you some idea of my background, I'm sitting at the moment in my office surrounded by a small farm. We took on a piece of land, it's about ten acres, about sixteen years ago, myself and my wife and our three then-young sons. They're all grown up now; the youngest is twenty, the oldest is twenty-seven. We've made a big commitment to an organic farm. Before that, we had some experience of managing land on the west coast of Scotland for a number of years.

So, we've mixed the passion for making places, growing food, being really, I guess, committed to what one of your other recent interviewees called an ecological civilisation, I think it is. Which maybe might lead into another question, I guess.

Ben: Well, there are a few questions I have and one of them is we feel like we haven't completed the story because what you offer these days is a complete package which is not an architecture firm really?

Neil: No. I often say things like, we're not an architectural practice, we're not a builder, and we're not a manufacturer, but in actual fact we're all three. We're a completely unique entity focused really on the delivery of great places. So, great houses, we do other buildings as well, but we're really focused on that whole delivery side of things rather than limiting ourselves to design and then letting things run a course which is often a very disappointing one.

Ben: Why?

Neil: [Chuckles] because it works for us, really. I mean, we're talking about the end of three decades of development work here. So, technically it's twenty-eight years I've been in business.

Neil: It's a long-term commitment. It's a life's work really. And that says quite a lot about it really.

I started off on my own. I ploughed alone, single, for about ten years working out how best to design buildings. I was quite disappointed by the options open to me in terms of the delivery side of things. So, I decided just to get on with it myself.

Pretty early on, I tried to work with some others on that, with varying success, and around about the time we moved to the place we live now, I had a couple of assistants at that time. And things have moved very rapidly.

It's in conjunction with having a small piece of land. We were able to develop a premises here; so we have a couple of large workshops now. And we now employ close on fifty people. So, it's moved pretty quickly over that period. There have been various ups and downs but it's been an exciting journey, frankly.

Ben: Is this all yourself or do you supply for other people?

Neil: We mainly design for manufacture and assembly of our own projects, but we have been known to take on the manufacture and assembly for other architects so long as we can get them early enough to undertake the technical requirements. Because designing for manufacture, one would imagine it would be different from designing for just conventional building but it's actually fundamentally different.

So, we're really intent on taking things from this kind of prototypical situation to making it much more widely available. So, working with others, collaborating, all these things are possible.

We're just quite busy, to be honest, with lots and lots of work at the moment. We know what we're doing this time next year, generally, because we're so much in demand at the moment. Which sounds a bit immodest but we've built up a real following, a real community around the kind of work we do up here now. Most of it's based in the Highlands. We also work in the close regions to the Highlands, but we're at capacity.

But that's not to say we can't develop that capacity and grow a bit further because we're quite ambitious in that sense.

Ben: It's quite an attractive prospect as a client to know, I've got a one contact source here and we're going to go the whole way through the process. They've done it lots of times before. So, maybe we can break this up a little bit.

My first questions are on design and build. What are the pros and cons of a design and build company?

Neil: One of the main things Ben is that we provide certainty over a number of things. So, we're good designers, we're design driven, but our service doesn't end there. That's the critical thing. So, we also offer certainty over programme and workmanship – let's call it that – and also cost.

If you put all of those things together, those four certainties to a customer, we offer all these things in one package.

I mean, if you look at the alternative which is to work with a number of consultants, perhaps an architect, an engineer, a cost consultant, and then try and work with a builder of some description, it's just a simple fact across Scotland and the UK that there are fewer and fewer smaller competent building companies for reasons that perhaps we may or may not go into. But it's very difficult to find a company who are motivated by the ecological progressive areas of working who are able to take on an architect's idea, a set of ideas, and actually make them work.

As the cradle-to-cradle guys would say, design is about intentions. So, what is the intention? As I've learnt over the years, the intention is the first stage but one has to figure out how to get things delivered. The execution of things is perhaps far more challenging than coming up with bright ideas, if you like.

Ben: So, what exactly goes into one of your projects when you're thinking about making it ecological?

Neil: Well, the three things that come together to make a wonderful outcome with any project really – there are three aspects that I'll run through, and I would suggest at the outset that one or more of these is usually compromised in a standard approach to the design and delivery of housing.

The first one really is a thorough understanding of our customer's brief. That's pretty important to get to know the customer a bit, to really sit down with them and really understand what they're trying to do. That brief has to be taken seriously. It's a wonderful thing to gather these threads together. It's a very personal thing to understand someone's real needs.

The second aspect is really site analysis. So, contextual work. Everywhere has constraints and opportunities be it a beautiful wooded site or open hillside site or on the edge of a village or in the middle of a town. Wherever it is, there's context, there are things to respond to, there are things that you want to exemplify, there are other things you want to perhaps reduce.

Then the third element is what I describe as a flexible delivery approach. We have a custom focused manufacture and delivery approach here which is based on a number of standardised approaches, particularly around the use of timber and the region's timber up in the north of Scotland here. So, we've taken quite a lot of time to work out how to respond to the most common renewable construction material which is timber and we just have such a wonderful context around timber up in the north here.

So, if you take those three elements, the customer's brief, the site analysis, and the flexible delivery approach, and you don't compromise any three of those, you end up with a wonderful outcome in our experience.

Ben: Timber is obviously a large part of what you do. How do you know the supply chain is steady and that you're actually using something that's been carefully harvested over the years, it's all going to be renewable? Is that just the industry in Scotland? I must admit, I don't know too much about timber from Scotland.

Neil: Well, there's a certain context in the UK with timber. We got to very, very low levels of tree cover a hundred years ago when the Forestry Commission was setup as a strategic resource after the First World War. We were down at two to three percent forest cover. Just extraordinary levels of depletion.

In Scotland, we've now managed to build that up to about eighteen percent. The Scottish government's ambition is twenty-five percent. It's a bit of an arbitrary number. The average European coverage is about thirty-five, thirty-seven percent. So, things are improving.

But as a result of that Ben, we have a very unusual species mix in terms of forestry cover in the north here. We're dominated by what you'd call four commercial species complimentary to each other which is a wonderful thing.

The four species are pine, that's mainly Scots pine; fir, that's mainly Douglas fir; the larch, the mainly European larch which is native to the Alps but not Britain; and the final one is spruce. The European version is Norway spruce as we call it, but Sitka spruce predominates in Scotland. Something like sixty-two percent of the entire resource of Scotland is Sitka spruce.

I probably know more foresters in this part of the world than I do architects. I'm more comfortable in some respects with that whole timber industry sector. I'm an advisor to the Scottish government on how we actually take our wonderful resource that captures carbon

and is such a beautiful thing to live with, such a versatile material to build with, and we're developing progressive ways of utilising it.

So, everything from structural use to insulation – wood fibre insulation we're working on just now – to finishes, to pretty much everything. You can make a wonderful house predominantly out of timber and some of that long-term thinking, which I think we need to move towards now as a common and comfortable thing, can be done if you know what you're doing with timber. And that's a really refreshing, optimistic idea, I think.

Ben: Is there any feedback from you as partially an architecture firm to what kind of timber you would want to use, or do you just use what is supplied, those four main species?

Neil: That's a good question. What we're doing is we're using the common characteristics of those species for different applications. We don't use chemical treatments as a general rule. There are one or two areas within a building where the British Standard would suggest that the environmental conditions are such that you would need a durable timber or one that's been taken to a certain level of durability through a chemical treatment, but we try to avoid that.

So for instance, we would use spruce for the carcassing of a panel type of construction. We would use Scots pine there as well, which is a common species to the drier parts of the eastern part of the country here. Douglas fir is a wonderful timber for large section use for beams and posts and for exposed timber. And larch is a naturally durable material which is used extensively on the external applications of buildings. So, cladding, decking, all the external uses. And you don't actually have to put any surface treatment on larch for it to actually last for in excess of a hundred years under normal cladding conditions.

So, we have a range of different timbers. And I've not mentioned the hardwoods and there are some other more specialised softwoods as well. But there's enough there to do everything we want to do, to do it without chemical treatments, and to work in anticipation of the circular economy, in anticipation of the idea that timber buildings are uniquely adaptable in the sense that they are repairable and you can change them. You can take them apart and put them back together again, this type of thing.

So, yes, we're in a sense surrounded in the northern hemisphere by cultures that understand that whole timber thing perhaps better than we do, but we are progressing along the route of a timber culture now, I believe. And MAKAR is part of that movement, I would say.

Ben: What does it look like? You mentioned you're at capacity for the next year or so. Do you just phone up and say, 'I need this much timber' and it's easy to get hold of? How does it work?

Neil: We work quite closely with the sawmillers. Part of the problem in this country, in Scotland and throughout the UK, is that a lot of the small to medium sized sawmills have not survived. So, we tend to have a few large sawmills and a small number of smaller ones.

That's not necessarily the case in other parts of the world, and particularly Europe, where you would naturally have small to medium sized sawmills which relate to the local resource and how it's used.

So, that's a bit of a challenge but we are working with some of the bigger mills and they have an interest in what we're doing.

We would be buying regular quantities of different types of timber directly from sawmillers to our specification. And what we've done Ben, is we've looked at the resource and we've responded to the resource rather than the usual design approach which would be to design something and then actually look around to what you're going to use to build it.

We have a very unique resource here and we know quite a lot about it. So, we're responding to that really.

Ben: When things go through, are you dealing with one building at a time and then going on to the next one, or can you do a few things at once?

Neil: We're generally building one at a time. We have a team of around fifteen operatives in our workshop, focused on what we call a custom manufacturing approach.

I could tell you a little bit more about that, if you like?

It's kind of in the middle of a couple of extremes. So, I don't know if you know much about lean manufacture? It emerged really from the Toyota production system in the Eighties. As a quick aside on that, MIT based research back in the Eighties and Nineties trying to figure out why the Japanese were getting so good at fabricating cars that were so reliable, they were basically very, very good products. They figured out that they were following an approach that had been developed over a number of decades over in Japan.

I won't go into it any further than that, but the fact is that most people who look at lean regard it as something to do with

manufacture, something to do with hyper-efficiency and lack of waste. But the real insight into this is that it's about people. It's about what motivates people to do good work, how to get people really motivated to do things carefully and with a lot of attention to detail and care. It's about driving out defects, getting things right the first time, really enjoying what they're doing, developing it.

And again, that's now harping back to my experience as an apprentice engineer because it's a fact that when I worked as an engineer as a young lad, I worked with some very creative people. And it's a fact that when I got to architecture college, I was quite surprised at how uncreative a lot of the people were there. It's when you go about making things, when you connect the theory and practice of things together, you get a third thing that comes out which is a kind of tangible, pragmatic capability which is not held up as important as it is, in actual fact.

So, very often the people who are making things are the best people to ask how to improve the process. So, we talk out here Ben about process innovation. So most people talk about innovation in terms of product, in terms of things. But we're talking about the process, how you actually improve the process.

So, lean is somewhere in the middle of a kind of diagram with craft production at one extreme and mass production at the other. Lean production is somewhere in the middle. It's a customised approach which galvanises ideas around craft and ideas around mass production. But it's neither of those two things.

You can tell I'm a bit of a fan.

Ben: But when you've got a workshop like you've been saying, you want to optimise what you're doing and make the quality and everything, the ecological side of it, all work together. And there's always room for improvement, isn't there?

Neil: Yes, there is. And for example, the whole Passivhaus movement is a quality assurance kind of approach to things and it's very, very well suited to what we're doing.

So we're just finishing our second Passivhaus project at the moment and it's been a real joy because the attention to detail, the real commitment that comes from having people working on things, putting themselves into the outcome of things and being really proud and very satisfied with the work they're doing.

So, we use a term called meaningful work, which isn't my term. I think it came from Wendell Berry or one of the Americans, but we

are engaged in this whole idea of having work which is respectful towards everyone involved in that work, is respectful towards things beyond ourselves. So, it's an ecological approach to engaging with the world. Who would want to be involved in work which isn't meaningful, which doesn't make those connections?

So, every time we build a house, we know that it's going to impact on people's lives in a very profound manner.

We're also really keen to encourage others to go down a similar path. For example, this afternoon I have Jon Bootland from the Passivhaus Trust coming to see me. He's up in the Highlands on holiday.

Ben: Say hello.

Neil: I will do. Jon hasn't been here yet, but really, really keen to encourage people to come and see what we're doing.

I've got another group from Brittany coming to see us in a couple of months, I've got a group from Japan coming. That's not to say we're doing anything unique Ben, but what we are doing, we're doing it with as much capability as we have. And I guess that kind of rubs off on people.

I've taken from other people as well. So, I think this whole idea of creative endeavours cooperating across the piece is something which we don't do enough of.

Ben: Well, I was going to say that actually, I feel that in the ecological circles, it is something that seems to happen a fair amount. And people like Jon Bootland, he's a good connector. He gets around. So, I hope that goes well.

Just finishing off then, what comes out of the factory and how is it all put together on site?

Neil: What we're focused on Ben is what we call large sub-assemblies. So, we're not building in a conventional manner which is using gravity to hold things up, necessarily. The way one would approach the making of these large sub-assemblies is radically, fundamentally different. So you're making quite large pieces.

The main constraint we have is transportation. We've worked out over the years that our ambition for a standard panel size is around about three metres wide because we can move that on the road relatively easily after you've told the police what you're doing. So,

we aim for that. They're probably four-point-eight or six metres long. We can also make things longer than that.

Another key thing, I think, is to mention here, is that it's not about speed. It's about quality. Speed and cost reduction come after a period of time. If one focuses on quality and consistency around quality, one will naturally speed up and things will get a little bit cheaper over time. But off-site construction methods are certainly generally not cheaper, but they're a hell of a lot better and more consistent.

So, what we're doing is we're making the pieces in sequence. We make floor panels, wall panels, roof panels, intermediate floor panels, we make post and beam elements. Well, you could say there are three pieces to it: there are panels of the type I've mentioned; there's post and beam elements as the second piece; and the third piece is modular elements, mainly service modules. So, parts of the house which have a lot of plumbing, ventilation and electrics in them.

We make three-dimensional – people call them pods; whatever you want to call them – modules, and we're looking to do as much of that servicing here. The more we can make in the workshop, the better it is as an outcome. We're still working very hard on this actually, the whole modular side of things.

But the future is about having less and less equipment, more and more fabric first, more and more simplicity around buildings really. But use the word optimisations. So, what equipment you do have you have to make sure it is working well and it's optimised. We've got some ideas around how to do that and we're working on that just now.

But there's enough work here to keep us busy for several lifetimes, in that sense.

Ben: Well, I really enjoyed our chat today and it sounds like everything's going in the right direction, so thanks for making time for us today. Cheers.

Neil: Thanks very much.