

## Episode 259

# Constructing the masonry superstructure of Portree Passivhaus – with Mike Coe

The show notes: [www.houseplanninghelp.com/259](http://www.houseplanninghelp.com/259)

Mike: The groundworks went fairly well. We had one small complication in that there was an area at one corner of the house, on the south west corner, where the ground was soft. And any complications like that obviously always translate into increased costs. So, concrete had to be poured in, in order to provide a stable foundation.

But most of it went fairly well. We have this stuff on Skye called rotten rock which is a combination of the normal clay subsoil but with volcanic small rock particles mixed in with it. And if you can hit that, you hit a very good, stable building material that you can build straight on to.

We were fortunate in that we found some of it on the site and some of it on our neighbouring croft. So, there were a lot of digger and dumper journeys bringing this rotten rock over. But it avoids bringing in huge amounts of aggregate and other material from elsewhere.

So, generally speaking, we did okay. We did well with the rotten rock which is what everybody looks for when they're building on Skye. We also built the driveway up to the house using it as well. So, that went pretty well.

And the digger driver was only twenty years old. Young master Robert. I think his father runs one of only two local groundworks companies. His father runs Staffin Groundworks. So, young Robert, I think he climbed straight into a digger out of his pram. He's massively skilled despite his extreme youth.

Ben: One of the challenges that you've got being on a slope is how you stabilise the house, how you get things level. So, was it always going to be a case that you dig into the earth so you've got a retaining wall and you have to move the spoil somewhere?

Mike: Yes, that was the idea.

In a sense, the slope of the site was part of its appeal because anyone who remembers our previous self-build project, the Autonomous House at Cropthorne, it was upside down. So, we had the living area as upstairs and the bedrooms and bathrooms downstairs. But that was on a relatively flat site. So, you came into the house and you normally came and went upstairs to the living areas.

In this house it was very appealing in that we could build again with the living area upstairs and more like a dormitory area below. But because of the slope of the site, we're actually able to have the main entrance on the upper floor with another secondary entrance down below.

So, in a sense it works better and it makes for a more interesting house. It makes for a more interesting layout. Obviously, it becomes more expensive because as you said, we have to dig into the hillside. But we've tried to minimise that to an extent in that the lower floor, which is partially earth sheltered, is not as large as the floor above. So, we've minimised the amount of groundworks in a sense. But yes, we had to build an earth retaining wall.

Again, the local rotten rock makes this quite simple because the soil is more or less self-supporting. You almost don't need a retaining wall. You can make a steep cliff and generally it all stays there; all of the soil stays there. But yes, a big earth retaining wall went in. The lower floor is partially submerged; the upper floor, which is the larger one, is at ground level where you enter at the back and then there's a small mezzanine floor above that.

So, it's a three storey house but only one of the storeys is full sized.

Ben: And you're going masonry again. Can you describe those first few layers and why you've chosen to go with a masonry house?

Mike: Well, part of the reason for masonry build is that the Cropthorne Autonomous House worked in terms of using the structure of the building as a thermal store. So, you build up heat during the summer, it gives it back over the winter.

It's an unusual method of construction in the Highlands and Islands. Almost every house, even older ones, are timber framed in some form or another, even if they're clad in blocks or bricks. Basically, the internal structure is timber. And I think some of that comes down to the local climate or weather patterns in that you do get a lot of rain here. So, in a sense, it's easier to put up a building quickly

and get the roof on and make it weathertight if you build in timber or some kind of timber frame construction.

But I wanted to stick with brick and block which is much more familiar to those of us from the south because the Crophorne Autonomous House worked, but also because climate change is a very important thing to consider these days and there's little doubt that things are changing perhaps more dramatically than some people expected.

I think it's inevitable that we're going to get more extreme weather. We haven't had that much of it in the UK yet, but there's rarely a week when there isn't some kind of extreme weather event somewhere in the world which makes it into the news. So, I was also concerned about building a house that is structurally very strong, very resilient to high winds, torrential rain, all of these kinds of things, which could potentially, if it gets really, really bad, could damage a relatively lightweight building.

So, there were two reasons really. It was thermal storage and resilience against unpredictable weather.

Ben: You're on an island. I get the unpredictable weather and how that could get a lot worse, but you've actually moved much further north from where you used to be. When I'm saying we're in a heatwave down here and you're saying, 'I think it's sixteen degrees today,' are you really expecting those high temperatures where you are?

Mike: Well, I know temperatures are increasing globally. So, we're starting from a lower base, but yes, it's going to get warmer. It's not going to be hot all the time, but it's already been an advantage, even recently in the last few months when there have been temperatures in the thirties in the south and we haven't seen anything above about twenty-four, twenty-five degrees at the warmest.

I don't know how things are in the south at the moment, but today I think it's seventeen degrees here. It's sunny, there's a light breeze, it's very, very pleasant.

So, yes, we're in a more temperate environment here and that was a major reason for the move. Neither Lizzy nor I like the heat. Some people love it; some people don't mind when it gets into the thirties. Neither of us are comfortable. We wilt, we get grumpy and generally quite disagreeable. So, it's more comfortable.

But yes, I think the point is that temperatures will rise everywhere but we are starting from a lower base. So, hopefully we will remain comfortable for longer. But also, a prime facet of the whole

Passivhaus design procedure is resilience against overheating as well as keeping warm in the winter. Protection against overheating is designed in and we made sure that this house has well-planned shading. And again, there's the strategy of building high mass; thermal damping also helps to avoid overheating if we get increasingly hot summers.

Ben: Let's talk through some of those details of the technical design. We've mentioned masonry, but you've also got quite a bit of steel in there. Can you talk us through how you're going from the base right up, what you're doing with insulation, all the nooks and crannies?

Mike: Fundamentally, the construction is very similar to Crophorne.

We started with in effect a tray formed of insulation, the floor insulation. So, the tray contains the lower ground floor slab which was poured into it. So, that's completely isolated from the environment by insulation. Then all of the internal concrete block walls are built onto the edges of that slab.

So, you've got the internal part of the house completely isolated.

Then we've got three-hundred-and-seventy-five millimetre cavities with TeploTies, the low thermal transmissivity wall ties, so that we don't lose heat through the wall ties. And we've used Knauf DriTherm insulation, which was actually the same as at Crophorne. It's a latter variant but it's basically the same insulation which carries on right the way through up to the wall plates.

On top of that, now let's see. We're going to have a green roof. So, this is an interesting new adventure which I think is quite entertaining. We've got a very substantial roof structure in order to take the weight of the soil on which the grass will grow on the roof. But below that, sitting on top of the structural I-beams, there's another layer of insulation. It's a solid block insulation very similar to what you would put underneath a floor, so that that can take the weight of the turf roof above.

There are various embellishments on the outside which are not particularly to do with the thermal performance or anything structural but were kind of what the planning department indicated to the architect they liked. And when the planning department says, 'we like this one,' that means that there's a chance that they'll pass it.

So, the most expensive, lavish design with stone cladding and a turf roof was the one that the planning department said they liked. So,

that is what we've ended up building. It's not necessarily what we planned.

But that's the basic structure. Brick and block, three-hundred-and-seventy-five mill. cavities, triple-glazed windows, super insulated, avoidance of thermal bridges and a turf roof and stone clad on the outside.

Ben: That roof. I was looking at some photos on your website a little bit earlier. You've got I-beams. So, you have a lot of masonry, even a beam and block floor on that main living space that you're going to have, but then I don't understand. Why are you not continuing up to the roof? Is it just easier at that point to switch to I-beams? Particularly when you've got all that soil that's going to go on top.

Mike: Well, the timber I-beams are strong enough to take the weight of the soil. The feeling was that we had enough thermal mass by that point. So, the internal structural leaf block walls are six inches thick, or a hundred-and-forty millimetres I think they are these days. So, they're six inches thick and then it's a beam and block suspended concrete floor.

I think that's enough. At Crophorne, everything we could possibly make concrete, we did. So, we had a concrete staircase and we used old electric radiator blocks as well to make the kitchen wall. But I think we had more thermal mass than we needed. I think we've reined it in a little bit with this design, and I think it's fine. Because also, there's the mezzanine floor, which is effectively the first floor and will also be timber. That's I-beams and timber, and a timber roof.

I think it would also have been very difficult in construction terms to put a concrete roof structure onto this building because you would have needed a crane in order to lift the concrete beams into place. And you can't get a crane to the site. This is a very common problem on Skye, something that our contractor is very familiar with. Very often you can't get the machinery to the sites because there just isn't the access. The roads are tiny, they're halfway up a hill, lots of bends and steep slopes and things.

So, it would have been really difficult. Basically, you can't get a crane to the site so anything very, very heavy you can't install.

Ben: That's quite interesting because you'd think your site is lavish for space. It may have that slight incline but you've got a lot of room there. But it's actually the layout of Skye.

Mike: Yes, exactly.

I was talking to Robert McQueen, who's our main contractor, a little while ago. He was saying he used to own one of those – I don't know if you've seen them? They call them a telehandler but it's like a forklift machine with a massive extending arm which can extend out about fifteen metres. So, you can pick pallets up and then you can move them fifteen metres away and drop them down again. Amazing pieces of machinery. And we've actually used one on this project for one or two bits and pieces.

But he said that he used to own one, but he ended up selling it because there were so few projects where there was access to get the machine to. He found that he was never using it. So, he sold it, and when he needs one now, he hires one in. It's actually much cheaper to do that.

So, access is often a problem and you often, in some cases, access dictates what you can actually build because you simply can't build very, very heavy buildings and certain forms of construction you can't use because typically, for an example, you can't get a crane there.

Ben: Makes sense.

Going back to climate change and to the materials that you're using, there's a lot of steel, a lot of masonry. Do you not feel that you are contributing your fair share to climate change as well through building this house?

Mike: Well, I've said plenty of times in the past, the only truly environmentally benign dwelling, house or any kind of building, is the one that you don't construct.

So, yes, there's undoubtedly embodied energy in this house. How significant it is in terms of global carbon emissions compared to things that could be very, very easily avoided, I don't know. In use, the house will have a tiny environmental footprint. It's very energy efficient, it doesn't have a heating system, it'll have renewable energy systems as well.

But I know it sounds naïve because we've done this before, but Lizzy and I were slightly surprised at how big and how impressive the house is. Because you have meetings with the architects and they say, 'let's do this, let's do that.' And we're like, 'that sounds great, yeah.' And 'we're designing the steel and that's going to cost ...' 'What? How many thousand?' But now that the house is actually taking shape to the point where you can really see what it is, it's

amazing how much steel there is in it. And yes, admittedly, there's a lot of concrete.

On the plus side, there are no fired clay roof tiles or fired clay bricks. So, those are very, very high CO<sub>2</sub> emissions in manufacturing. So, maybe it's not as bad as it might be, I don't know.

People with massive brains can do incredibly complicated calculations and work out how many years it is before you repay your carbon deficit. I honestly don't know what those figures are but it's probably something like ten, fifteen years or so, you've repaid your carbon debt.

But it was partly, as I mentioned earlier, the business of the planning department, with the three or four preliminary designs that were submitted by the architects in informal conversations, this was the one they liked. Well, blow me down, it's the biggest and most expensive of all of the dwellings. But it's got this stone cladding on the outside and it's got a lot of concrete in it.

So, there are issues, but then as I was just saying a short while ago, when you look to the future and the weather's going to become increasingly wild and unpredictable, this house isn't going to blow down. It's very, very heavy. And it's got a turf roof. The turf roof is also part of the resilience strategy because there are no roof tiles to lift off. Once you've got a well-established turf roof, it's all tied together by the roots of the grass and it's not going to come off unless you have truly exceptional hurricanes.

So, in a way, I'm not sure. People have suggested that we should have built thermally light, that we should have used timber frame construction and so forth, but then a timber framed house is not without environmental implications. Most timber now is imported from places like Indonesia. We chopped down all the UK's native forests hundreds of years ago. There are still almost inevitably concrete bases and there's still concrete in timber framed houses.

So, you can't build a house that has no environmental impact whatsoever. You have to look at it in the longer term and you have to consider the uncertain future that we face and that perhaps we do need to build houses which are resilient to extreme weather.

Ben: What about the scale? You've mentioned that it's feeling big. Did you let anything go there? You could have the same design, just take it down a notch. Or is it like me, that I feel in a way that if I built smaller on this particular site, I would have been losing money?

Mike: Well, that is a factor, isn't it? And this did come up as well. Architects will always say to you – I don't know what the phrase is, but don't under-build for your site. Build a house that is proportionate to what the site can take.

Because yes, although you're not, I know, and we aren't considering selling on, circumstances can change completely unpredicted and you end up selling and you think, 'we've really thrown a lot of money away. We could've put a bigger house on the site.'

So, the house is proportionate to the site, I think. It looks big. Some of the neighbours the other day said, 'we didn't realise it was going to be so big.' Well, the plans have been there for a long time to be looked at.

It is only a four-bedroom house and the three bedrooms which are downstairs are not actually that large. Lizzy and I like to have our own bedrooms; that's something we prefer. So, that's two of the bedrooms. The third one, although it will probably be a bedroom for future occupants, it's going to be my media studio where I do my music work and a bit of video editing and things, and then upstairs we've got a little en-suite room for Lizzy's elderly mother who we're hoping will be able to come and live with us for a while.

So, it isn't massive. There's also this point of when you've got three-hundred-and-seventy-five mill. cavities and then two-hundred millimetres of stone cladding on the outside, the walls are very thick. So, you look at the outside of the house and you think it's quite a large house, but then when you go inside, a bit like the old medieval castles, the rooms aren't that large because the walls are so thick. So, it has a larger footprint for a house of this size than it would do if you built in a conventional way where the walls were only six to eight inches thick.

Ben: Let's talk about your involvement in this project. You're the clients. What else are you?

Mike: Well, this has never been a secret. I didn't want to do a second self-build. I don't think I've recovered from the first one. I think I've still got self-build fatigue from the first project.

Ben: Let's stop there. Self-build fatigue from the first one. How has that manifested itself? Because I felt tired at the end of the project, and to be honest, three or four months down the line, I know I didn't do anything near what you did. But I feel just much better. It's all out of my system now.

Mike: Yes, and you can appreciate the house, can't you? You can say that actually this is what it was all about and it's terrific.

I don't think we had enough of that period at Crophorne where we were able to just relax and enjoy the house. Because when we finished the Crophorne Autonomous House, I didn't like it. Not because I didn't think it was a nice house, I just didn't like the whole project because it had taken so much out of me and I had spent so much time there and I'd put so much into it. I was just tired out and I couldn't face another screwdriver, or saw, or paintbrush or anything. I just wanted to do something else entirely.

But as time passed, both Lizzy and I began to really like the house because you start to forget all the horrors of construction and you think yes, actually, it is fantastic. We're really lucky and privileged to be able to live somewhere like this and the hard work was worth it.

I don't think we had a sufficiently long recovery period before launching into this one.

The plan was, okay, having accepted that we would be building again, let's try to afford to have most of the work done by contractors, specialists, electricians, plumbers, whoever's required, so that we can be a bit more hands-off. We'd proven our willingness to work, our ability to take these tasks on. Let's be a little bit more hands-off.

But, of course, nothing works out quite as you expect and multiple factors conspired to have me back on site almost constantly. The biggest problem being the huge increase in construction costs between the original estimate provided by a quantity surveyor and the real world tenders that we got when we put it out to tender; the real world quotes that we got from a very limited number of potential contractors in this area.

So, we chose the one we could afford but it was more than we wanted it to be. We had to take out certain parts of the project so that we could make it affordable, which basically meant we'll take out the electrics and I'll do that because that's something I can do. And we'll take out the mechanical ventilation system because that's something I can do and furthermore, there isn't anybody here who can do it. Well, there are people here who can do it, but not to Passivhaus standard.

But then beyond that, I mean, the building team are pretty good to be fair. They're a good company and they're nice people to have around. But some of the Passivhaus stuff, it's been very hard

getting the message through. It's been very hard getting through to the bricklayers and other people. Passivhaus means that things have got to be done to a very good standard. It's all about during and post construction quality control. And trying to get across the message that the insulation has got to be kept clean and dry – difficult in this climate – as dry as possible and put in neatly without any gaps – I don't know why but it's just proved to be very tough.

So, I've actually ended up doing a lot of quality control type work on insulation. I've spent weekends pulling insulation out, cleaning it, putting it back again, and I've taken on the upper parts of the insulation where it has to be cut to fit the slope of the roof. I've basically said, 'leave all of this to me. I'll do it.' And then if it's not right, then at least we know it's my fault and nobody else can be blamed.

So, I've ended up well and truly back on site and as soon as the sarking ply goes on the roof, which will happen in the next couple of weeks – and I shall be involved in that because that's a critical airtightness detail that we've got to get the roof airtight. And as soon as that's happened, and we've got a more-or-less weathertight building, then I'll be starting on electrics and MVHR.

There has been no escape, unfortunately. From the original plan, it was like, if we can afford it, we'll just get a contractor to do the whole thing. And then that kind of got reined in to we can't quite afford it so, I'll do just enough. And then it's like the job has grown all on its own so I've actually ended up being on site quite a lot.

And that's the way it's gone.

Ben: How much of this is perfectionism versus if you'd been down in Crothorne speaking remotely to this lot and you'd come back and the house had been finished, do you think you would notice a big difference and the performance would be that different?

I know what you're saying and I'm sure – lots of little gaps and things like that. But when you're going a masonry approach, I wonder how precise. Obviously, every little gap is going to make a difference, but how much difference?

Mike: It's impossible to say, really, isn't it?

I mean, I am a Capricorn. So, I'm naturally fastidious and nit-picking and therefore difficult to get on with. So, I want things to be perfect.

But I also want things to be perfect if I'm spending this much money on a major project like this.

Ben: Yes, that's fine. But it sounds like the team are just, 'oh, it's Mike. We'll let you do that.' But has that been okay, that relationship?

Mike: It's been fine, yes. Generally, I've found that I can get on with people on building sites very well. Because I've done so much stuff myself. So, we talk the same language.

Actually, there's a minor, slightly amusing diversion which I'll come back to on that.

No, I haven't found it to be a problem. It wasn't a problem at Crothorne; it's not a problem here. I keep out of their way. I don't interfere. But I am, in effect, taking on the role of the Passivhaus quality control operative. So, there would have been somebody doing this anyway, even if it wasn't me. If I'd been able to afford to pay somebody to do it, there would have been somebody on the site saying, 'this has got to be done this way. That isn't quite right. That'll have to be redone. That hole is going to have to be filled in.'

So, I don't think it's a problem. But if you're reasonable with people and they're reasonable people themselves, I don't think there's ever a problem really. Unless you happen to be unlucky and get someone who's incredibly stropky. But luckily here, they're all nice blokes and really not a problem at all.

As for would the house have been as good if it had been not supervised at all, it's very difficult to tell. But I would say, looking at the state of some of the insulation, I think there would have been a measurable, if not perceptible by humans, shortfall in the performance. Because there were holes in the insulation, some of it was really mangled up, some of it was filthy dirty, and when you've got dust and concrete and the delightfully named mortar snots embedded in insulation, all of those materials are hygroscopic. So, they absorb water from the atmosphere and become thermally conductive.

So, I think the performance would have been compromised had I not exercised this quality control that I've been doing. By how much, it's really, really impossible to say, I think.

Ben: Well, the big one is the steel, really; that you spotted that potential thermal bridge?

Mike: Yes, I did. And again, this was lack of experience, I suppose. Even architects and engineers who haven't encountered this form of construction before can get caught out.

There were one or two issues, in fact, but there was a very obvious one which nobody spotted until the steel was actually in place, that there were two quite chunky pieces of steel I-beam bolted straight across the cavity in the west-facing wall from inside to out. So, you'd got just the most incredible two thermal bridges straight across the cavity.

There were one or two others that were easily eliminated by slightly modifying the structure of the steel, but this particular one the engineer wouldn't budge. Because I was saying, 'can't we just take these out? I can't see that they're necessary.' And it was like, 'well, no, we can't. They're actually required to basically make sure that the building doesn't fall down.'

So, that was a tricky one. And maybe I should have looked more carefully at the plans. But sometimes you don't spot things until they're actually constructed, until they're in place.

But after a good deal of negotiation and some advice obtained online from other architects around the world – because we're very fortunate, Lizzy and I; we're known for our Crophorne Autonomous House. So, if I post an enquiry online, I get lots of useful replies from people who really know what they're talking about. And the suggestion was that we could perhaps shorten these two bridging pieces of steel, put thermal brake pads in – so basically, little bits of insulation – and use stainless steel rather than normal steel bolts, and that would significantly reduce the transmission across those two pieces of steel.

So, that in fact is what we've done. So, I'm fairly happy that okay, we've still probably got a little bit of a thermal bridge there, but a very bad situation has been turned into a perfectly acceptable one.

Ben: The superstructure now is pretty much there. Do we say windows in is the last bit? Or do we have to have the cladding on as well?

Mike: Well, some windows are going in as I chat. In fact, I'm just looking at the live webcam and yes, there are windows going in. The stone cladding has started, and there are various other bits of carpentry going on. So, there are multiple processes taking place at the moment.

We're actually in a period of quite good progress. We've had quite quiet periods in the past which were very frustrating.

Fundamentally, the contractor had agreed to do quite a large extension to a small local hotel, turning it into a medium sized local hotel, which was due to start at the end of this year's tourist season.

So, September or October or whatever, they might have been starting to go and prepare the site. But what happened was, about three or four weeks after starting our house which was very well staffed initially, the local hotel company came to the contractor and said, 'we want to bring this forward. We want to start this extension immediately.'

For a local contractor, our house is quite a big project; the extension to this hotel was an even bigger project but he couldn't really turn them down because this particular hotel company have used him on a number of occasions. I think they have a good relationship. It's a bigger project than ours. I think it's something like a two-million pound extension or something. I don't know exactly what it is.

So, he couldn't really so no. So, what happened was, his staff were spread rather thin in order to get the hotel extension underway but still keep building our house. So, that slowed things down quite a lot.

It's been frustrating in some ways from that point of view, but not really his fault.

Ben: This is common though, isn't it? I can name a number of situations when this has happened and I actually feel very, very grateful on my own project that I think my contractor must have a good process for this of saying, 'basically, you're after this project. I can't specify the exact date. I can tell you roughly when it's going to happen.' And they may have done little bits and pieces during the project, but nothing at all ....

Mike: No, it sounds as though your project was quite well-managed, doesn't it? And I guess you had a project manager on site quite often, did you?

Ben: Well, here's a question. Is it worth getting your architect – was that the difference? Someone who really knows what they're doing? You're paying more, obviously. But was that the whip-cracking and contract and following progress, having these meetings saying, 'where are we with the schedule? Are we bang on time?' You know, they've obviously done lots of developments before.

But it's a big problem, isn't it? If the hotel, as you say, a big business who's probably going to have more work down the line, what do they do?

Mike: Oh, they have, yes. They've got more work lined up, yes.

Ben: Well, I hope that one sorts itself out.

We have to talk a little bit about money because when we left things last year, you knew you could get a certain way. You don't sound like you're burying your head in the sand. Do you think you'll be able to get to the inside bit and keep on track there?

Mike: Well, every cloud has a silver lining, doesn't it? And the delays that we've experienced have actually meant that we've been spending money more slowly than we expected. And since Lizzy and I are both pensioners now, we've got pensions coming in. So, for every month that we delay, we get another pension payment each.

So, we haven't spent as much of the cash reserves as I expected we would have done at this stage. I'm doing the electrics and the MVHR anyway. I think I always would have done, to be honest. Although I would have grumbled and complained about it, I think I always would have done those because those are the sorts of things that I do.

So, I would say – I won't tell you what the figures are – but at the stage we're at now, which is about to become weathertight and stone cladding going on, we've spent about half of the money that we started with.

Ben: Wow. That's really good, I would have thought. I know obviously finishes cost a lot of money and things like that, but the important thing is you getting to watertight, first fix, being able to finish off a few rooms. So, that's really good. Well done.

Mike: I would say, with very, very cautious optimism, that we probably will get to the end and I would really like to just be able to arrange for the contractor to install the bathrooms, put the kitchen in, do all of the internal carpentry.

And the absolute dream would be to be able to have somebody else do the decorating. Because we decorated the whole of the Crothorne house and that wasn't as big a house as this and that takes a long time. That's really, really hard work. It would be really nice to be able to afford professional decorators. But we'll see. We'll see how it goes.

The financial situation at the moment is not dire. It's not too bad.

Ben: Would you agree with me that when you get watertight, you're actually about halfway through the project?

Mike: Yeah, probably. It's a significant point, isn't it? It's a point at which you can actually start to clean up the interior, in the case of any building on the Isle of Skye, pump the water out, and you can start

to get on with the internal fitting out. So, that feels like a turning point. And we are fairly close to that.

In terms of what's halfway, I don't know. If the way things are going with this hotel extension means that more of RK Joinery's men are freed up, then they'll arrive on site and things can get done remarkably quickly. If you've got fifteen men working, which I think is about the size of the company, things can move on very rapidly. So, time wise, it's very difficult to say.

In terms of the whole project schedule, yes, it's probably about halfway. Probably slightly more than halfway when you look at a building which has such a complex design and is so difficult to construct. There's a lot more work gone into getting to this stage than there would have done if it was just like a rectangular box built on a flat site.

Ben: Is there anything else we should know about this stage of getting things going, going into construction and putting up the superstructure?

Mike: No, I think we've covered pretty well everything. I think you can see now it is going to be an amazing house. You can start to see some of the architectural input beginning to make sense. You can see how the vision of the architect is translating into a building that is going to look fantastic, and it is going to be an amazing building to live in.

We're still some way from that, but you can see that it is going to be quite exceptional.

It's nothing like anything else in this area. There's no building probably on the entire island, and probably you can draw a circle out into the Highlands of about thirty miles radius. There's nothing like it. So, it is quite an exceptional thing.

Whether we've done the right thing in terms of using all this steel and using all this concrete? Who knows? I don't know. Time will tell, I suppose. But it is going to be great, but we're nowhere near complete yet. There is still an awful lot to do.

Ben: Shall we catch up next year?

Mike: Next year? Yes.

Ben: Well, I think we followed your whole journey in year increments. So, we'll be checking back. I'm expecting the next one actually to be the one where you're going, 'why did we do this again?'

Mike: Well, yes, I'm certainly not doing it a third time.

We might have moved in this time next year. I think there's a chance. Crophorne took three years; this would be taking two. Maybe even before that. I don't know. I'm not really sure.

Ben: Well, all the best and we'll speak soon.