

LEHII Case History: Grantham Road



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1. Introduction

Grantham Road is a three-bedroom private home built in Fiveways, a residential area in Brighton. Ever since visiting the Centre for Alternative Technology, based in Wales, in the 1970s, the owners Linda and Malcolm Kemp had been aspired to building their own, sustainable home. After five years of planning and construction they finally moved to Grantham Road in 2015. The Grantham Road house cost £450,000 and was built on land which had been part of the Kemps' large garden in their previous Victorian property, in which they had lived for 20 years. Working closely with the architect and builder, the Kemps incorporated novel sustainable building measures into their building what was to be their home during retirement. Grantham Road was built to Level 5 of the Code for Sustainable Homes¹ and also benefitted from the Feed-in-tariff² and the Renewable Heat Incentive³.

Technical features

- Air Source Heat Pump
- Double glazing
- Low energy lighting
- Low energy appliances
- Natural materials
- Solar PV
- Solar thermal
- Rainwater harvesting
- Underfloor heating
- Wood burning stove with back boiler

1.1. Key insights

- Grantham Road is an eco-house built incorporating a mix of sustainability and low energy measures with a strong focus on design and aesthetics
- The role of the architect was key in creating a sustainable home from the client's initial vision, as well as coordinating the build project with planners, consultants and builders
- Government policy changes during the project adjusted the Grantham Road site from a brownfield site to a greenfield site – meaning that the build had to meet Code for Sustainable Homes Level 5

2. The beginning: desire towards sustainable design

Linda and Malcolm Kemp are a semi-retired couple of graphic designers who have lived in Brighton since 1968. The Kemps had long been interested in eco and sustainable building and had always thought of building their own house. Their interest in sustainable buildings goes back to the 1970s and their visit to the Centre of Alternative Technology (CAT)⁴ while on holiday in Wales. CAT was established in 1973 in an old slate quarry site near Machynlleth, Wales, with an aim to create an eco-friendly community which could act as a test bed for new technologies and ideas. Over the years CAT has become an educational charitable organisation, running a popular visitor centre, short courses, postgraduate degrees and research via their Zero Carbon Britain project⁵. When the Kemps visited CAT, it was especially inspirational at the time as it represented what was then new ideas and technologies, such as solar panels.

Despite the Kemps having always wanted to pursue the idea of building their own sustainable home, it took nearly 40 years for them to do so. Motivated by sustainability, as well as an interest in architecture and design, the Kemps also wanted to build a home that would be economical. Especially as they were nearing retirement, the Kemps were motivated by the possibility of having a cheaper home to run, which might cost a little bit more to begin with but would have lower heating costs in the long run, allowing them to spend retirement with less financial burdens. Prior to Grantham Road, the Kemps had lived in a large Victorian house which had required a lot of maintenance, costing a lot of money and having high heating bills. While the Kemps had installed solar panels in their old house, their aim was to build a new sustainable home, rather than retrofit their old house - which as a five-bedroom house was too big for them once their children had left home.

3. Design and planning stage: working with architects, planning and builders

Planning for the new house took six years from concept to build and involved engagement with architects, builders, local planning authority and neighbours. The Kemps started doing a lot of research into sustainable houses and features in magazines such as Grand Designs. As both Linda and Malcolm were graphic designers, they had a natural interest as much in the design aspects as in the sustainability aspects of their future home. For example the Kemps went to quite a few Eco Open Houses⁶ - an annual event organised collaboratively by Low Carbon Trust, Brighton Permaculture Trust, and Brighton and Hove City Council to showcase sustainable homes – with an aim to look at

different sustainable houses and who had been involved in designing and building those. They also watched several TV programmes on house building.

3.1. Hiring architects

The Kemps were clear from the start that they wanted to work with an architect on the project, who would also be able to project manage the build for them as they did not want to take the task of project management themselves. The Kemps contacted a few architecture firms for quotes, but Malcolm also personally knew the Director of Deacon and Richardson Architects who also provided a quote for the project. Deacon and Richardson' offer ended up being the most attractive one and the Kemps appointed the firm as architects for the project in June 2009. While the Director of the firm set the project up, he ended up retiring soon after. However, Dave Batey, one of the architects at the firm, was keen to take the project on.

“He [Director] set up the project, and I just took it from there. I really clicked with Malcolm and Linda. We got on very well, and I think they trusted me, and I really got my head round what they were after quite early on. I think my director was just happy for me just to take it and run with it.” (interview comment, Dave Batey, Deacon and Richardson Architects)

Batey also had an interest in sustainable and low energy housing and had designed low energy features to houses, especially with new builds in Brighton. While Batey had completed a few Code Level 3 or 4 houses in the projects he previously worked in, the Grantham Road house was a step up from his previous projects in terms of sustainability and low carbon energy. It was clear from the start to Batey that the Kemps wanted an eco home that was sustainable, high quality, innovative, comfortable to live in and *“something a bit different”* (interview comment, Dave Batey, Deacon and Richardson Architects). The Kemps gave *“a very clear brief”* to Batey, including for example a scrapbook of examples and other similar projects that they liked (interview comment, Dave Batey, Deacon and Richardson Architects). For Batey, it was refreshing to have a client who believed in both design and sustainability (interview comment).

3.2. Adjusting designs and acquiring planning permission

Initially Batey gave the Kemps three different design options from their first design meeting: 1) a house that uses more passive means for heating, and ventilation, with orientation and solar shading; 2) a more high-tech house, close to a passive house; and 3) a 'techy' house, with solar panels and heat

pumps, and other low energy measures. The Kemps were not keen on the idea of a passive house as they did not like the idea of “*living in a sealed box*” (interview comment, Dave Batey, Deacon and Richardson Architects). The actual building that Batey and his colleagues delivered in the end ended up being a mix of basic solar principles and high technology options, which they had to use in order to achieve zero-carbon (interview comment, Dave Batey, Deacon and Richardson Architects). For example, the efficiency of the other options selected meant that triple glazing was not necessary, and the Kemps opted out on that one (interview comment, the Kemps). Batey and the Kemps had a productive and flexible working relationship from the start of the project, with room for negotiation and iteration.

“At that early outset, it was myself and the client. Malcolm and Linda are designers, so we had quite an active process of us working up designs, showing it to them, and then them, giving their feedback, and then we’d go back and refine it.” (interview comment, Dave Batey, Deacon and Richardson Architects)

Even though the Kemps had quite a lot of input into the process of how the house would look like, they nevertheless stepped back and let the architects to get on with the design and planning process. Malcolm especially did not want to get too involved in the project management of the build and was happy for the architects to manage that, especially after having seen examples of similar arrangements on TV programmes about building projects.

In terms of obtaining planning permission, this process took approximately 19 months and involved engagement with the planning authority Brighton and Hove City Council, and with neighbours. While for example the separate lane access from the main road to the garden made it possible to build a house in the old garden, this nevertheless required negotiation with neighbours to ensure access to the site. The Kemps contacted all the neighbouring houses by letter to tell them about their building plans, explaining that they would seek planning consent for a private project and planned to live in the house themselves. Only one neighbour objected on the basis of how far the house was from the road for fire safety and for this reason the final designs for the house were fitted with water sprinklers. They also received one letter of support.

The first planning proposal for the house had the house on ground level, but this was rejected in April 2010 as the design was considered to be too high in comparison to neighbouring buildings and there was not enough space to have a car turn around on the site. The architects were faced with the option of either to appeal the planning decision or redesign the house.

“We think we would have got for the height, but the car turning was something that probably we should have addressed. Instead of taking it to appeal, we just redesigned it, set it lower, and got this car turning head into it.” (interview comment, Dave Batey, Deacon and Richardson Architects)

The architects came up with the idea of digging into the ground to lower the height of the building and the final designs included kitchen and living area on the ground floor and two bedrooms and a study on the lower ground floor of the building.

Another hurdle during the design and planning process was a policy change affecting planning requirements. Once the second planning application for Grantham Road had been submitted, legislation regarding garden sites changed. While garden sites had been defined as brownfield sites in planning policy before, they were redefined as greenfield sites, meaning that Brighton and Hove City Council’s planning policy required that houses developed on greenfield sites had to meet Level 5 of Code for Sustainable Homes. This change in policy came as a challenge for the project as Batey had to reassess some of the sustainability objectives for the design.

“Code 5 is very hard. We were hit with that just before it went into planning, and this was this big change in objectives. Because we had worked it up as a sustainable home, a lot of the principles were there. It’s just, we had to really prove it. Often people can design sustainable homes, but when it comes to the crunch, if you can’t afford to put that extra solar panel on, or whatever it is, you don’t necessarily have to. With us, we had to hit all these targets that had been laid out. So that was a big change in the objectives. At that point, we had to do an assessment on our design, to make sure that we could do it.” (interview comment, Dave Batey, Deacon and Richardson Architects)

In order to meet Code Level 5 requirements, the design incorporated several sustainability measures, from high energy efficiency to renewable energy as well as those related to landscaping and wildlife. Level 5 was based on a points system and required getting a certain number of points for measures such as double or triple glazing, wood burning boiler, solar panels, air source heat pumps, green areas, boxes for bats and birds, bike shelters and outside washing lines for example, and the house design had to accumulate points from different areas of the build to reach Level 5. The Kemps invested a lot of personal time in sourcing many of the materials such as lighting, flooring and doors for example, which had to be FSC certified⁷ to meet the Code level 5 requirements. They spent a lot of time searching the Internet, reading books, watching TV programmes such as Grand Designs and speaking to different companies in order to source the right materials. Furthermore, the Kemps and Batey had meetings every two weeks which enabled them to check the choice of right materials.

The second planning application “*sailed through planning*” and was approved in September 2010 (interview comment, Dave Batey, Deacon and Richardson Architects). Even though the house is located in a conservation area, the overall planning process went relatively smoothly and Batey especially mentioned the good working relationship they ended up having with the relevant planning officer.

“We had a very good case officer, who, unfortunately, refused it without speaking to us in the first instance. Once it was refused, we approached her and said, “Look, we want to work with you to come to a scheme that you’ll be happy with,” and she was very good. I think she was quite amenable because Malcolm and Linda had been consulting so much with their neighbours, and she liked that. I think she, kind of, took a shine to us, and was really helpful. Whereas quite often they just say to you, “Look, I’m not interested. Make another application and I’ll assess it, but I won’t speak to you now”, whereas she was really good.” (interview comment, Dave Batey, Deacon and Richardson Architects).

Once planning was approved, the Kemps put their old house on the market, a process which ended up taking much longer than they had initially anticipated.

3.3. Selling the old house

The Kemps had always had the idea that they could use part of the old house’s garden as a site for their new home, as the separate lane access from the main road to the garden would make this

possible. The Kemps had also considered getting a mortgage with the old house, though that had not succeeded as the information they had received from the bank giving self-build mortgages had understood their building plans incorrectly. Thus, the Kemps could not stay in the old house but instead they had to sell it in order to finance the new house.

Selling the old five-bedroom house also meant that the Kemps could downsize to a smaller property after their children had grown up and left home, and stay in the area which they liked and had lived in for a very long time. However, selling the old house took much longer than initially anticipated. They first put the old house on the market in September 2010 but as their first sale fell through, the house was put on the market again. It took longer to get an offer second time around as there were plenty of other properties on the market, and potential new buyers had to also deal with new homes being constructed in close proximity to the house. In total, the Kemps had approximately 80 viewings before the old house was finally sold in March 2012.

3.4. Choosing a builder

Once the planning application was secured and the old house sold, the Kemps via their architect, invited tenders from four builders for the actual construction work in November 2013. At first, the tenders came back very high, largely due to the fact that as it was the end of the recession which had hit the UK housing market hard from the back of the 2008 global financial crash, the building industry started to pick up again with prices rocketing (interview comment, Dave Batey, Deacon and Richardson Architects). As a result, Batey and the Kemps had to do a lot of cost saving, with one large change to the house design being that they omitted one bedroom from the build. As this was done within the parameters of the planning approval, the Kemps could, in effect, build another bedroom later on within their planning approval if they wanted to (interview comment, Dave Batey, Deacon and Richardson Architects). For Kemps, losing the bedroom was not a great deal as they, as graphic designers, had used to working with limitations and they did not actually miss the extra bedroom in the end.

The Kemps ended up choosing a small local company, R. & R. Building Services as the builder for the project. While Batey had not seen R. & R. Building Services' previous work, they were aware that they had built a similar house nearby which was also dug into the ground. In fact, the Kemps had visited that house during the Eco Open Houses event and considered it being a good quality build. Furthermore, Batey spoke to an engineer that he knew, who had worked with R. & R. Building

Services, and gave good feedback on them (interview comment, Dave Batey, Deacon and Richardson Architects).

“Malcolm and Linda had looked at their [R. & R. Building Services] work, but at that point, it was a big unknown, particularly for us, because we hadn’t worked with them before. You always got to work with new contractors. You can’t just keep using the same ones. Fortunately it worked out really well. We’re keen to work with them again.” (interview comment, Dave Batey, Deacon and Richardson Architects).

R. & R. Building Services was set up by Terry Coghlan, a carpenter by trade, in 1990. When the Kemps met with the builders, they especially liked the way R. & R. Building Services operated, the kind of work that they had completed in the past and their quote was reasonable, without aiming for a large profit as some of the other tenderers had seemed to have done. R. & R. Building Services themselves had learnt from their previous projects and had incorporated low-energy measures in other buildings.

“In 2008 we built our first house which incorporated a lot of the low-energy products. We took it on. We didn’t know much about that type of work, but it was a way of learning, so we took it on. We’ve been working with it ever since.” (interview comment, Terry Coghlan, R. & R. Building Services)

Furthermore, R. & R. Building Services’ previous project had won the Federation of Master Builders (FMB) Energy Efficiency Award in 2011 in both regional and national category (interview comment, Terry Coghlan, R. & R. Building Services). Before construction began, the architect and the Kemps gave R. & R. Building Services clear details of what the design would be like:

“All the materials basically were specified. It wasn’t something that we chose. It was all specified. The Kemps and the architect had worked all this out before.” (interview comment, Terry Coghlan, R. & R. Building Services)

The difference with this project to other projects that R. & R. Building Services had completed in the past, as well as after the Kemp’s project, was that a lot of the details that the builder would not normally get before starting the project was given to them in advance. As Coghlan further noted,

sourcing the right materials *“is all about knowledge, it’s all about people understanding what’s required, and then they can have these products, but a lot of people don’t”* as they would have to spend a lot of time finding those (interview comment). However, in the Grantham Road case, R. & R. Building Services had 95% of the information that they needed in advance, with very good detailing and work schedules included, aiding the construction process (interview comment, Terry Coghlan, R. & R. Building Services).

4. Construction stage

Construction for the Grantham Road house started in June 2014 and the build took a total of 11 months. First stage of the construction was to excavate chalk to reach the lower height of the building. In order to comply with the Code level 5 the chalk had to be reused and not sent to landfill (interview comment, the Kemps). The site was challenging for the builders as the access to the site was restricted through the narrow lane, and all building materials had to be carried from the road and concrete had to be pumped from the road via a pipe. However, according to Coghlan, there are always challenges with every build and the key is how you address and manage them (interview comment).

Through the whole build project, there were several actors involved, including consultants such as a Code for Sustainable Homes Assessor, which the architects had in-house to begin with, as well as an energy assessor, a structural engineer, a services consultant (who dealt with all mechanical and electrical services including incoming gas, water and electricity), an ecology consultant and a tree consultant (interview comment, Dave Batey, Deacon and Richardson Architects). The energy consultant had *“a very big role at the detailed design stages of the project, because we had to get the balance of everything right”* with measures such as insulation and windows (interview comment, Dave Batey, Deacon and Richardson Architects). The structural engineer ensured that the build met certain requirements such as correct surface water run from the site in order to avoid flooding. The services consultant was involved ensuring that gas, water and electricity services on the site were installed correctly.

During the construction stage, Batey was co-ordinating the project between the builder and the client, though the Kemps had to solve an issue with water supply to the site. Initially the Kemps had hoped to bring all mains electricity and water from the old house, but this was not possible as the local water company Southern Water said that they would not be responsible for any access under another

building. As a result, the Kemps asked the developer of the neighbouring new homes whether they could join their drainage, electricity and water systems. The developer agreed to this, for a payment, but did not connect the Kemps' site to water supply after all.

"It's an isolation site. We've really struggled to get services into the site. We were fortunate that the neighbouring site was a development, so we tapped into their incoming electricity, and we managed to get into their drainage as well, but the incoming water was a big problem, because we had to bring in our own supply and the supply for the domestic sprinklers. Again, the site was so isolated, the fire brigade couldn't get to it, so we have to have sprinklers. It was a pretty horrible process for Malcolm because he had an agreement with the neighbouring developer that that developer would put in the water supply for them. They had to pay him to do that, but he didn't. He did lay the pipes, but he didn't make any applications to the local authority and Southern Water. It was getting a bit touch and go, because I think the water only went live about three months before the project completed, so I think that was nothing to do with the builder, and it wasn't anything to do with us. It was Malcolm and Linda having an agreement with their neighbour, and they had to deal with it all." (interview comment, Dave Batey, Deacon and Richardson Architects).

Despite these challenges, the overall build process went smoothly, given the restrictions of the site and the requirements of the Code Level 5. Batey attributed this to the effort, thought and detail that had been put into the design of the house (interview comment). Coghlan noted that there are always challenges with building projects and that it is the nature of the business, though with the Grantham Road project the build was made easier thanks to the good relationship and cooperation between the Kemps, Batey and Coghlan, as well as the detailed plans that were available before and during the construction process (interview comment, Terry Coghlan, R. & R. Building Services).

"It was made a lot easier because there were good relations between the client, the architect, and us, and we kept those relations at a good standard, and we just solved the problems. Whatever they might be, we solved the problems." (interview comment, Terry Coghlan, R. & R. Building Services)

Furthermore, as Coghlan saw it, the roles during the construction process were very clear between the client, the architect and the builder, with the Kemps especially having a very clear vision of what they wanted while Batey was very good at helping to translate that vision into the design, which left Coghlan and his team to create that in practice.

“The client is the boss. That’s our goal, to achieve what it is that they want. The architect is the guy that’s going to communicate between us and them to achieve that. Our goal is just basically to create it.” (interview comment, Terry Coghlan, R. & R. Building Services)

5. Sustainable energy provision: high energy efficiency and renewable energy

Sustainable energy through energy efficiency and renewable energy measures were important in the Grantham Road build, not only for the Kemps but also for Batey and Coghlan. It was important to the Kemps as *“they wanted to live in what they believed to be an energy efficient home that was helping the planet”* (interview comment, Dave Batey, Deacon and Richardson Architects), while it was important for Batey too as he believes that *“building contributes a lot to global warming, and we need to address it”* (interview comment, Dave Batey, Deacon and Richardson Architects). Furthermore, it was also critical from a legislative point of view as the build had to meet the requirements of Code Level 5 as set out in their planning permission.

Incorporating the latest sustainable energy measures was a rather challenging task as the build project also had to stay within the Kemps’ budget - for example they opted for double glazing instead of triple glazing and optimised the use of passive sun. The house incorporated several energy efficiency measures, such as insulation and air tightness. Linda Kemp for example would have preferred natural insulation, such as wool, but as it turned out to be more expensive as well as slightly less performing, so on the advice of Batey, the Kemps opted for PUR insulation.

“We put in a hell of a lot of insulation in the roof and floor slab, and the upper walls. The thermal values that we achieved were way, way beyond what building control required. We also looked at air tightness. It’s a very airtight house, so there won’t be much heat leakage because of a drafty window or whatever. Those were the, sort of, passive things we did.” (interview comment, Dave Batey, Deacon and Richardson Architects)

Furthermore, 75% of lighting had to be energy efficient, while the design used as much natural light throughout the building as possible – but also included measures such as window blinds to avoid potential overheating from the sun in summer time.

In terms of energy generation, the house had several measures installed, including solar PV and solar thermal panels, a wood burning stove with a back boiler, and an air source heat pump. Initially the Kemps were planning on having a biomass boiler, but after seeing one of the Eco Open Houses, they realised how much space a biomass boiler and pellets would take and decided to opt for an air source heat pump.

“It’s got PV panels that create electricity from the sun. It’s got solar panels, which create water from the sun. That feeds into this big tank, which is called a ‘thermal store’. Obviously, on a dark and dreary day, you’re not going to get any hot water off of your roof, so they had... It’s called a ‘wood burning back boiler’. It’s like a wood burner, it produces hot water when it’s running. That would go into the thermal store as well. That was the base principle.” (interview comment, Dave Batey, Deacon and Richardson Architects)

The different energy elements are operated from a control centre, situated in a cupboard in the utility room, which took the Kemps some time to learn how to use.

Most of the sustainable energy measures that have been installed in Grantham Road were possible as they were incorporated in the design-stage of the build. However, Coghlan especially noted that many of the measures might be too expensive to retrofit on existing buildings (interview comment, Terry Coghlan, R. & R. Building Services).

6. Learning: Living with new technology and acting as an example to others

Key learning from the project for the Kemps has been to adjust in living in an eco-home with features such as an air source heat pump and solar thermal, which has meant learning how to use technologies new to them. The learning process has been complicated in trying to work out especially the heating system which is rather complex.

Some technological issues became very frustrating for the Kemps as they had invested money in all the environmental features which then did not work properly. For example, there were problems with the air source heat pump, which is installed outside in an underground storage room to avoid noise. At first the heat pump was fighting against incoming air and causing the system to signal up a fault, meaning that it was not working properly. In order to fix that, holes had to be drilled on the other side of the store room to let air circulate correctly. Furthermore, Batey also had concerns that the Kemps had been relying too much on the air source heat pump, rather than using the wood burner as the main heat source as intended, because air source heat pumps can use a lot of energy if they are not used correctly (interview comment, Dave Batey, Deacon and Richardson Architects).

“You don’t want to have to put your wood burner on in the middle of the summer, so for that reason we introduced the air source heat pump, which they have been using a fair bit, which worried me a bit. They’ve been using the air source heat pump to, kind of, top up the tank, to get that extra bit of warmth.” (interview comment, Dave Batey, Deacon and Richardson Architects)

However, most of the problems were rectified as they came up, and the heating and hot water system was working well in March 2016 almost a year into the Kemps moving in. Despite the initial problems, the Kemps had achieved large savings in their heating bills and they were also getting income from the Feed-in-Tariff for solar, as well as from the Renewable Heat Incentive for the wood burner (though they had not had a full year in the house at the time of the interview so could not fully compare bills to previous year).

The architect Batey went on a steep learning curve during the project, especially in terms of technical details and technology choices, using sources such as BRE’s case studies⁸ as well as other architecture firms in the local area. And even though the project was not profitable for the Deacon and Richardson Architects in the end, given the amount of extra time Batey spent on learning, it was a useful process for them nevertheless.

“I had to do a lot of reading on the project. I spent a lot of my own time reading up on stuff. I had to do a lot of research. Everything we specified had this extra layer of checking. You had to make sure that the door had FSC wood in it, and all that sort of stuff. I think, from a

business point of view, this was very much a non-profit making project. We made quite a loss on it, but it's something we're interested in. It was worth the effort." (interview comment, Dave Batey, Deacon and Richardson Architects)

For the builder Coghlan, being involved in the project was a success and he was very pleased with the outcome, including the design of the house as well as its sustainability features.

"It was a fantastic project to do, because you've got the low-energy systems in there, but the house is beautiful, the way it was designed, the way it works. Everything about it – the colours, the design of it – was beautiful. It was hard work, but a pleasure at the end." (interview comment, Terry Coghlan, R. & R. Building Services)

Furthermore, the project confirmed that Coghlan and his team already had *"a great deal of knowledge when we went into that one"*, having built the previous eco-house in Brighton and he felt that they already knew a great deal about sustainable energy features in particular (interview comment, Terry Coghlan, R. & R. Building Services). However, Coghlan and his team have used the Grantham Road build as a reference for other projects, indicating for example R. & R. Building Services' expertise in measures such as air tightness. Coghlan noted that while sustainable energy measures might be easy to do on new build projects, a challenge remains how to address existing buildings to meet carbon targets.

"I think it's difficult, because I think new-builds can achieve it, retrofits are going to struggle to achieve it, and the majority of houses are already built. So what you're going to achieve from the carbon-free zones, from the new buildings, in my view are not really going to outweigh the existing buildings." (interview comment, Terry Coghlan, R. & R. Building Services).

The Grantham Road house was part of the Eco Open Houses event in 2015 and people could come and visit to see it. The Kemps decided to take part in the event with the hope that it might influence some people to do what they had done. However, the Kemps also realised that in areas like Brighton with several conservation areas and subsequent planning restrictions, projects like theirs might be tricky to do. The house attracted interest especially from 'energy enthusiasts'. Batey too, took part in the Eco

Open Houses event with the Kemps and produced leaflets about the house for example, but he was also left somewhat disappointed by some of the visitors at Grantham Road. Batey, did however, note that this was only a small minority and that as an architect he had got used to being criticised for the design choices he makes.

“There was, sort of, this 10% of people who obviously were really clued up in it all, and yes, I didn’t particularly take a shining to some... They were openly criticising us, which I thought was a bit inappropriate, really. That’s the nature of architecture. You’re supposed to take it on the chin.” (interview comment, Dave Batey, Deacon and Richardson Architects)

While architects currently operate in a system of ‘hand-over to the client and move on’, RIBA⁹ - Royal Institute of British Architects and the largest member organisation for architects - for example has been pushing for ‘soft landings’, i.e. encouraging architects to look at how buildings are performing from an energy point after they have been handed to the client. However, this might prove challenging especially as initial designs are not always used as intended (interview comment, Dave Batey, Deacon and Richardson Architects).

“If it’s not hitting its targets that it’s been designed to, we should be finding out why. It’s a difficult one, because, in practice, as architects, as builders as well, you’re only really paid up to the point where you hand the building over. To then go through this whole assessment process, and if things are going wrong... because the boiler is defective or whatever, then that’s fair enough, and that should be replaced. Sometimes, it can’t be about the way we’ve designed it. It might be about the way that the client is using the building that we’ve designed, and they might not be using it how it’s intended.” (interview comment, Dave Batey, Deacon and Richardson Architects)

However, in the Kemps’ case, Batey has maintained a personal interest in the project: *“I am interested in what their energy bills are. I want to know. If there are problems, then they’re only down the road, and we want to help out.”* (interview comment, Dave Batey, Deacon and Richardson Architects). The project showed that good cooperation throughout the project with different partners was key to its success. As Coghlan described it: *“The client and the architect were fantastic, an absolute pleasure to work for. It was a very good management system, and it just worked very well. Everyone worked*

together.” (interview comment, Terry Coghlan, R. & R. Building Services). Batey too agreed, as did the Kemps, that the team worked very well together, enabling a smooth process of a build that nevertheless was challenging with policy changes that occurred during the process, especially the strict sustainability measures to meet Code Level 5 requirements. The Kemps especially thought that the main thing for a project like theirs was to get a good architect and let them take responsibility for managing the project, so that there was only one person who was answerable and also coordinating the build.

Overall, both Kemps and Batey agreed that it is individuals like the Kemps who are pushing low energy housing projects forward. However, support from others is needed. The Kemps especially thought that there would be use for an organisation that could give advice about what people had to do when they were starting to plan for projects like theirs. They also called for more government support to put pressure on developers to include sustainable energy such as solar in new housing developments. However, both the Kemps and Batey highlighted that projects like Grantham Road are expensive to achieve, especially as factors such as professional consultancy fees in relation to achieving certain sustainability criteria can really add up to the costs.

7. Summary

The Grantham Road house was a result of a dream of the Kemps wanting to build their own, sustainable home. With a clear vision and the use of high standard materials they, together with architect Batey and builder Coghlan, created a sustainable house that is high-tech, striking and comfortable to live in. The role of Batey, their architect, was to translate the Kemps’ vision into design, while builder Coghlan created it in practice. By working closely together, the Kemps, Batey and Coghlan developed a solid working relationship, enabling an overall smooth building process despite challenges such as a policy change which required the build to meet Code Level 5 sustainability criteria.

Timeline

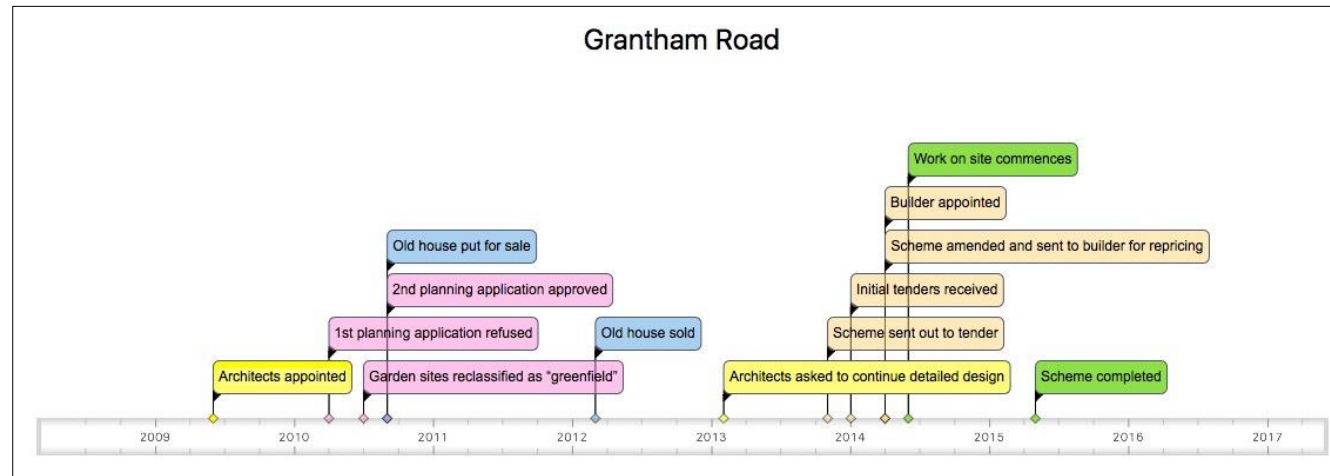


Figure 1: Grantham Road Timeline

Data Sources

The case study history is based on one manually noted in-depth interview and two digitally recorded and transcribed in-depth interviews, all carried out in person. It also draws on background material such as the Eco Open Houses Brighton and Hove archives^{Error! Bookmark not defined.}.

References

- ¹ The Code for Sustainable Homes was launched in 2007 as an environmental assessment method for rating and certifying new homes in terms of Energy and CO² emissions, water, materials, surface water run-off, waste, pollution, health and wellbeing, management and ecology. The Code Level 6 was the highest, and most efficient, level of the Code. The Code also allowed councils to adopt their own sustainability levels as a planning requirement for new residential development. However, the Code was removed by government in March 2015.
- ² Feed-in Tariff (FIT) Scheme: <https://www.ofgem.gov.uk/environmental-programmes/feed-tariff-fit-scheme> [Accessed 27.05.2016]
- ³ Renewable Heat Incentive (RHI): <https://www.ofgem.gov.uk/environmental-programmes/domestic-renewable-heat-incentive> [Accessed 27.05.2016]
- ⁴ How CAT Started: <https://content.cat.org.uk/index.php/how-cat-started> [Accessed 27.05.2016]
- ⁵ Zero Carbon Britain: <http://zerocarbonbritain.org/en/> [Accessed 27.05.2016]
- ⁶ Eco Open Houses Brighton & Hove: <http://www.ecoopenhouses.org/index.html> [Accessed 27.05.2016]
- ⁷ FSC Certification: <https://ic.fsc.org/en/certification> [Accessed 27.05.2016]
- ⁸ BRE case studies on low energy housing: <https://www.bre.co.uk/podpage.jsp?id=1744> [Accessed 27.05.2016]
- ⁹ RIBA: <https://www.architecture.com/Explore/Home.aspx> [Accessed 27.05.2016]