

LEHII Case History: One Brighton



April 2018

Report prepared by Mari Martiskainen and Paula Kivimaa, Centre on Innovation and Energy Demand

April 2018

For further information please contact:

Mari Martiskainen
Sussex Energy Group
SPRU- Science and Technology Policy Research
University of Sussex
Brighton, BN1 9QE

Email: m.martiskainen@sussex.ac.uk

<http://cied.ac.uk/research/emergence/lowenergyhousinginnovations>

The Low Energy Housing Innovations and the role of Intermediaries (LEHII) research project is part of the Centre on Innovation and Energy Demand, a research centre funded by UKRC. The LEHII project is conducted by Dr Paula Kivimaa and Dr Mari Martiskainen.

1. Introduction

One Brighton is a residential and community space building developed to the principles of One Planet Living. It builds in part on the experience of BedZED, a pioneering low energy housing development of the early 2000s, developed by an environmental charity, Bioregional, in partnership with Peabody. The One Brighton development consists of two apartment buildings that were built between 2007-2010 and are situated on an old railway site in close proximity to Brighton Railway Station in the heart of the city. As part of a wider 'New England Quarter' development, One Brighton also contributes to a wider regeneration plan of the previously derelict brownfield site. Following several years of planning and consultation with the local community, One Brighton was

completed with 172 apartments, of which 54 are affordable homes, as well as a café, offices and community space. One Brighton is a car-free development, except for disabled parking and a car club. Other sustainability features include, for example, highly energy efficient building fabric and windows, solar panels, biomass boiler, rooftop allotments and waste recycling facilities. At the time when the building was designed, the zero carbon definition proposed in recent UK legislation did not exist. A recent upgrade of the biomass boiler in 2016 has meant that the building is now operating completely on renewable energy, while purchase of certified renewable energy through an Energy Services Company (ESCo) for the remaining energy consumption means that One Brighton meets the definition of a zero carbon development.

Technical features

- Biomass heating and hot water
- Breathable clay block walls
- Car-free
- Energy efficient light fittings
- High performance glazing
- Highly efficient building fabric
- Photovoltaic panels
- Rain-water harvesting
- Roof top allotments
- Sustainably sourced timber
- Ventilation system with heat recovery
- Water efficient taps, fittings and appliances

"Two cutting edge apartment buildings in the heart of Britain's premiere seaside resort have brought sustainable living into the mainstream and achieved commercial success."

<http://www.bioregional.com/one-brighton/>

1.1. Key features of the case

The One Brighton case highlights the following key drivers that have influenced and impacted the development of this project and its broader impact subsequently.

- Brighton-based Sustainability Consultant was central in the development of One Brighton – he brought together community organisations, the local authority and key developer Bioregional
- Bioregional wanted to create a cost-effective development based on the principles of One Planet Living, which they had developed following BedZED, an earlier low energy housing project
- A major housing developer, Crest Nicholson, was part of the project to show the commercial viability of low carbon building and financial backing was also secured from Quintain Estates and Development PLC creating a joint venture company called Crest Nicholson Bioregional Quintain
- The project hired a full-time Sustainability Integrator to ensure that sustainability criteria set for the project by Bioregional were met at all stages of construction
- Bioregional has committed to long-term post-occupancy evaluation of the One Brighton project, going beyond many other developers, and delivering learning to subsequent projects

2. The beginning: From a derelict railway site to a mixed use development (1995-2003)

The development of One Brighton can be traced back to the mid-1990s with plans to redevelop an old brownfield site in the centre of Brighton. The old railway site, later to be known as the ‘New England Quarter’, had been derelict since 1968¹. Development of the site took several years, and several changes were made to the initial master plan that had included plans for new homes, a large supermarket and a car park. The proposals for the supermarket were particularly opposed by the local community, which saw it as disruptive to the local area in terms of increased traffic, while there were also concerns that the new homes included in the master plan would not be affordable.

“When the council started to talk about planning, having the site as a development area, the local community was very resistant and didn’t want the site developed.” (interview comment, Brighton & Hove City Council)

In 1997, a local community group called Brighton Urban Development and Design (Budd) was set up to challenge the master plan² and ensure that the local community’s views were taken on board in the

development of the site. The plans for the New England Quarter remained contested, especially in relation to the large supermarket proposal. For instance, one of the old buildings on the proposed supermarket site was taken over by squatters for a short period of time³. In 1999, Budd contacted sustainability organisation Bioregional to seek their help in proposing sustainable alternatives to the existing master plan.

“We had been invited by a local community group to oppose the building of an out-of-town shopping centre, just next to the station, and they wanted us to propose something more green. So we proposed a mixed-use development. Anyway, we left it, it helped them encourage the council to look at a new master plan for the site.” (interview comment, Bioregional)

Both Budd’s and Bioregional’s involvement at the master planning stage of the New England Quarter site meant that the planning authority Brighton and Hove City Council and the developer QED Property thought further about what the site could contain, and as a result it became *“a much more interesting and mixed use development instead of a supermarket”* (interview comment, Sustainability Consultant). As a result of this, QED Property commissioned URBED (Urbanism, Environment and Design)⁴ to help with the design and sustainability aspects of the site and following consultation with local people, the planning brief for the New England Quarter site was for a sustainable scheme based on creating a new sustainable neighbourhood. New proposals for the master plan were submitted in 1998, while a site-wide development brief was developed and adopted by Brighton and Hove City Council for the site in 2000 calling for an exemplar sustainable development, which had key principles of high density, proximity to public transport, low or car free parking and energy saving measures. The proposed new master plan was finally approved in 2003.

3. Planning stage: One Planet Living in the heart of Brighton (2005-2007)

As a requirement of the planning application approval, a Section 106 Agreement was included in the plans, a legally binding document which set out sustainability requirements for the site (interview comment, Brighton & Hove City Council).

“The compromise with the community group was that if development was going to go there, it should be very sustainable.” (interview comment, Brighton & Hove City Council).

The initial plans for One Brighton started to form in 2005, when a Brighton-based Sustainability Consultant heard that Brighton and Hove City Council was looking for solutions as to how to meet certain requirements for the New England Quarter site. The Sustainability Consultant happened to share office space with employees from Brighton and Hove City Council who were responsible for the community planning part and heard that the Council was considering their options especially for the community aspects of the development.

“It was a big old goods yard that had been derelict for about 40 years and the developer, as part of the planning gain was going to give the council a 10,000 square foot shell of a community building. So that was going to be like the community benefit. The council was pretty concerned that it didn’t have an obvious way of using that shell, it didn’t have the money to fit it out and it didn’t really necessarily want to be managing a community building either.” (interview comment, Sustainability Consultant)

Through his sustainability consultancy work, the Sustainability Consultant was aware of Ethical Property. He had been in touch with this building management company following a search for premises for Brighton Peace and Environment Centre (BPEC)⁵ as Ethical Property managed one of the properties BPEC had been potentially interested in. The Sustainability Consultant suggested to the Council that Ethical Property might be interested in becoming involved in the One Brighton community scheme too, and he went on to arrange a meeting between the Council, developer Chris Gilbert of QED Property and Ethical Property. From that meeting it was clear that the developer QED Property was not *“interested in developing the site which then ultimately became One Brighton”* (interview comment, Sustainability Consultant). Instead the Sustainability Consultant and Ethical Property contacted Bioregional, who in fact then came to visit the site and ended up becoming the lead developer for the One Brighton project.

“There was this final bit of the project left, and the contract for running the community centre was awarded to Ethical Property Company. They contacted us and said, “Look, we’re going to be in the building. We’ll run the community centre. Why don’t you build the

residential?” So that's how we ended up bidding for that site.” (interview comment, Bioregional)



Figure 1: One Planet Living

Bioregional had initiated BedZED⁶, a pioneering eco-development, which was developed by The Peabody Trust in partnership with Bioregional, and completed in South London in 2002. BedZED also led to Bioregional developing a One Planet Living concept in 2003, following their analysis of the lessons learnt from BedZED. The One Planet Living concept had its roots in WWF's Living Planet reports⁷ produced by Global Footprint Network that have been published every two years since 1998 and highlight the fact that many countries are using resources beyond what a one planet can provide, with the UK for example having a 'three-planet' lifestyle. One Planet Living covers sustainability in ten different areas including energy, materials, waste, transport, food, land use & wildlife, culture & community, equity & economy, and health & happiness (see Figure 1, left). Bioregional has also created their own network of One Planet Communities (interview comment, Bioregional).

For the Sustainability Consultant, the prospect of working with Bioregional was a welcome occurrence, giving them an opportunity to work with an organisation that shared their values.

“It was much better for us because we were working with really a green developer that shared our values and we were going to have a building what we all felt would be a much more positive development than would have been the case on another part of that site.” (interview comment, Sustainability Consultant)

Bioregional started working as a potential developer on the site in 2005, and secured funding from South East England Development Agency (SEEDA) to conduct an initial feasibility study. They later secured backing from Crest Nicholson PLC, one of the UK's largest upper-middle range housing developers, as well as 50% of Bioregional's equity from Quintain Estates and Development, another

property developer. Together the three organisations - Crest Nicholson, Bioregional and Quintain - formed a joint venture 'Crest Nicholson Bioregional Quintain' for the One Brighton project. They contracted Feilden Clegg Bradley Studios (FCB Studios) as the architect for the site, who were attracted to the project due to its sustainability motives (interview comment, FCB Studios).

While Bioregional was familiar with sustainable building construction, One Brighton was first of its kind for Crest Nicholson. What attracted Crest Nicholson to the project was personal commitment from their CEO Stephen Stone - an architect with an interest in design - as well as a general feeling that their customers would be interested in a project such as One Brighton (interview comment, Bioregional). At the time there was an increasing interest in sustainable buildings and Stephen Stone had in fact met Pete Halsall from Bioregional on a trip to Scandinavia which showcased sustainable and zero carbon homes (Halsall later on went on to establish The Good Homes Alliance, a group of housing developers and building industry organisations who promote sustainable homes and communities). During that trip, Halsall mentioned to Stone that Bioregional was involved in the One Brighton project and that they were looking for a likeminded development partner for the site (interview comment, Crest Nicholson). Crest Nicholson and Bioregional met following the trip and *"entered into an agreement to cooperate and work together"* (interview comment, Crest Nicholson).

"At the time, there was a lot of interest in green building. Stephen Stone himself is an architect, so he has an interest in design, and you know, just had faith in what we were doing." (interview comment, Bioregional)

As our interviewee recalls, *"there was a lot of interest, not necessarily from the volume house builders, but from government, in particular the Labour government at the time, towards a zero carbon agenda"* and a company like Crest Nicholson, which is more design-led rather than volume-led house builder, was interested in the concept (interview comment, Crest Nicholson).

"The sustainability agenda was something that we recognised that if you wanted to carry on making a positive contribution towards housing, you needed to embrace rather than ignore or reject at your peril." (interview comment, Crest Nicholson)

For Bioregional, however, the government's zero carbon policy objectives, while they were welcome, were never the reasons to develop a project like One Brighton, but rather the company looked at each project individually in terms of what it required (interview comment, Bioregional). Especially the experience from BedZED had shown that reducing carbon from housing required a lifestyle approach, rather than a focus on building-related emissions only (interview comment, Bioregional).

“For example, what's counted as building emissions are things like construction emissions from infrastructure, so roads for example, and airports, are included in that 50% [emissions from buildings]. Making a building more efficient is not going to tackle that. It includes all the unregulated emissions in a building, which are not tackled by building design, or not to any great extent. And it doesn't include things like greenhouse gases. We overestimate buildings and underestimate agriculture; you know, things like meat production, it's 25% of greenhouse gas emissions. So when you look at it, when you actually look at the building, I use a figure of about 20% of emissions. Then it gives you a much better perspective on what you need to do in the building.” (interview comment, Bioregional).

Furthermore, while BedZED had inspired the UK's zero carbon homes policy - an aspiration set in 2006 that from 2016 onwards all new homes should be zero carbon, but subsequently this was removed by the government in 2015 – the policy had been implemented in a way that was not consistent with Bioregional's recommendations and it was developed by people who did not have practical experience (interview comment, Bioregional). Bioregional for example saw that the Code for Sustainable Homes – a voluntary requirement for a points based sustainability criteria for new build – was not the best way to achieve low energy buildings.

“We were never supporters of Code 5 and 6 [the highest levels], because they were very prescriptive, very expensive to deliver, and delivered very small carbon savings above Code 4 in reality.” (interview comment, Bioregional).

Cooperating with Crest Nicholson provided Bioregional the opportunity to work with a large housing developer, who was like-minded and could provide financial backing and marketing skills, as well as take on the sustainability aspects of the project on board.

“Bioregional had first of all the longer-term vision and a brilliant relationship with Brighton Council, which was always helpful. They had lots of imagination and ideas. What we were able to do, I guess, is bring forward more practical solutions to enable their vision to be met economically.” (interview comment, Crest Nicholson)

Crest Nicholson, on the other hand, recognised that the One Brighton project would also provide an exciting opportunity for them (interview comment, Crest Nicholson). The company’s own research at the time had shown that in certain locations concepts such as zero carbon homes were likely to be popular amongst house buyers, with Brighton - along with Cambridge, London and Oxford - being one of them (interview comment, Crest Nicholson). The company also realised that as the billed costs were higher they needed an area that *“would both buy into the sustainability agenda and pay for it”*, with Brighton being one of those potential areas (interview comment, Crest Nicholson).

Working with Bioregional also provided an opportunity for Crest Nicholson to move further with a sustainability agenda and build on some of the projects that they had already completed, even though none of them had been as far reaching as the One Brighton development would be.

“We were already carrying out some stretching projects, but nothing of that zero carbon agenda at that stage. But we were aware of the way the whole political movement was moving, but also the way lifestyles were changing for future generations.” (interview comment, Crest Nicholson)

The lifestyles aspect especially was one of the key objectives of One Brighton, to ensure that the development would meet the vision of One Planet Living *“of a world in which people enjoy happy, healthy lives within their fair share of the earth’s resources, leaving space for wildlife and wilderness.”*⁸. Especially with buildings getting more energy efficient, it is increasingly more important to consider emissions from heat sources and lifestyles (interview comment, Crest Nicholson).

Bioregional created a One Planet Living story, which *“is easy to engage people with, and to drive through the project”* (interview comment, Bioregional). This approach was different and set One Brighton apart from other developers in the New England Quarter area.

“They encompass health and happiness of the occupants, food growing, transport. I think those are aspects that aren’t normally dealt with, which is probably where the scheme sets itself apart from normal developments.” (interview comment, FCB Studios).

Key objective for the One Brighton development was to meet sustainability criteria but also be affordable and architects FCB Studios had a part to play in ensuring that the design of the building project could meet that criteria, especially in terms of proposing a higher density for the development than was initially planned so that *“the client could afford to build to a higher standard from an environmental design point of view.”* (interview comment, FCB Studios). FCB Studios started an early consultation with the planning department, especially on the size of the development as the One Brighton team were trying to seek higher density for the project in order to afford to build to a higher standard from an environmental design point of view (interview comment, FCB Studios).

“There was quite a lot of discussion about a trade-off between increased density in exchange for the improved environmental performance of the scheme. That is perhaps a conversation you don’t normally get into with the planners and which was above and beyond the normal planning process.” (interview comment, FCB Studios).

3.1. Community engagement and planning: Creating a vision of One Planet Living in the heart of Brighton

To ensure that One Brighton took on board the views of local people, the pre-planning stage involved two years of active community and stakeholder engagement, facilitated by the Sustainability Consultant. The Sustainability Consultant had previous experience in community engagement, as well as fundraising, and he had won a contract to coordinate stakeholder engagement for the site, to *“really inform the overall design of the project”* (interview comment, Sustainability Consultant). As a result, the Sustainability Consultant spent 2005-2007 holding meetings with local community groups at BPEC, finding out what their views were for the One Brighton site, as well as organising public meetings, conducting questionnaires and placing display boards of the proposed development in key locations such as the Jubilee Library in central Brighton (interview comment, Sustainability Consultant). Furthermore, the Sustainability Consultant had small Isetta model cars made, as Isetta car manufacturer used to be based at the One Brighton site. The Sustainability Consultant wanted to show

the local community the links to the heritage of the One Brighton site. In fact, the public square outside One Brighton was later named Isetta square (interview comment, Sustainability Consultant).

A key outcome from the community engagement was the importance of including usable community space in the One Brighton development, that would also have social benefits. The One Brighton area has many unemployed people that are on a multi-deprivation index (interview comment, Friends Centre). For example the community meetings that the Sustainability Consultant held had resulted in suggestions to include rooftop allotments, a café and a community kitchen in One Brighton. The focus on local food growing especially was key to many community groups (interview comment, Sustainability Consultant).

“We were looking to say to people, “What do you want? What do you think will work?” And some really good ideas came out of that. One of the things was to put allotments on the roof, I remember that coming up in a meeting because we were looking at it and saying, “How do we find good opportunities to grow food locally so that..?” Because that was very much key to the One Planet principles of doing the project. We were looking at sites all around that area. It is very limited what you can do in the centre of Brighton in terms of growing food. Someone in one of the meetings said, “Well why don’t you just put them on the roof?” So we did. Things like that came up.” (interview comment, Sustainability Consultant).

Final planning application for the One Brighton development was submitted in 2006 and agreed in 2007. The Council’s planning department was supportive of the One Brighton development, especially Martin Randall, Head of Planning, championed the project (interview comment, Sustainability Consultant). However, the actual planning committee decision was close and had to be decided with the planning committee chair’s casting vote. Especially the car-free aspect of the development drew opposition from Conservative councillors who questioned it at the planning meeting. The Green party, Liberal Democrats and Labour councillors, however, were supportive of the development. The Green party councillors especially understood the car-free concept. At the time all three councillors of the St Peter’s and North Laine ward, in which One Brighton is located, were Green party councillors.

From the planning authority's point of view, One Brighton project went beyond minimum required standards, which was unusual and provided the Council an opportunity to work with an innovative developer. In a city, where 42% of emissions come from housing and there is a high proportion of buildings built before 1919, this was a welcome development, especially as Bioregional had aspirations beyond planning requirements and wanted to deliver zero carbon (interview comment, Brighton & Hove City Council).

"From the planning point of view, it was great to work with a developer that actually wanted to go beyond. And they had a really healthy approach, because they were not afraid of talking openly about the problems that they were having, in terms of how they could achieve their design aspirations. Because zero carbon's not easy. It wasn't easy then and it's still not easy now. But they also brought a whole load of other aspirations, in terms of materials and water and waste and everything." (interview comment, Brighton & Hove City Council)

The planning department secured the One Brighton development as a Beacon Project, which meant that One Brighton was also required to be built to the standard that had been volunteered by the developer (interview comment, Brighton & Hove City Council). In the case of One Brighton that meant EcoHomes Excellent (approximately equivalent to Code Level 4 of the Code for Sustainable Homes), though the energy performance level went beyond Code Level 4, with the aspiration of new zero carbon development and sustainable lifestyles strategies.

Another prerequisite for the One Brighton planning application was that it would also house premises for local community and charity organisations (interview comment, Friends Centre). As a result, a ground floor of on the One Brighton blocks was designed as a dedicated space for community organisations and became known as the 'Brighton Junction'.

"As far as I know, the council gave planning permission to the developers to develop on the grounds that the basement would be given out to be a community centre, or it couldn't go ahead without that." (interview comment, Friends Centre).

4. Construction stage: One Planet Team in action (2007-2010)

The role of Bioregional was central to the development of One Brighton and they were responsible for finding the site, working with the local community, raising finance, securing the joint-venture partners, leading on the sustainability design process and ensuring that it was implemented during construction – Bioregional did this by employing a unique Sustainability Integrator for the project. Bioregional also trained a caretaker, worked towards creating an energy service company, set up a process for post-occupancy evaluation and licensed the One Planet brand for the project (interview comment, Bioregional). Other organisations involved in the construction project included Crest Nicholson and Quintain, with whom Bioregional developed a joint venture, architects FCB Studios, planning authority Brighton & Hove City Council, and contractor Denne Construction. The team also included engineers, planning experts and landscaping consultants (see Figure 2, below).

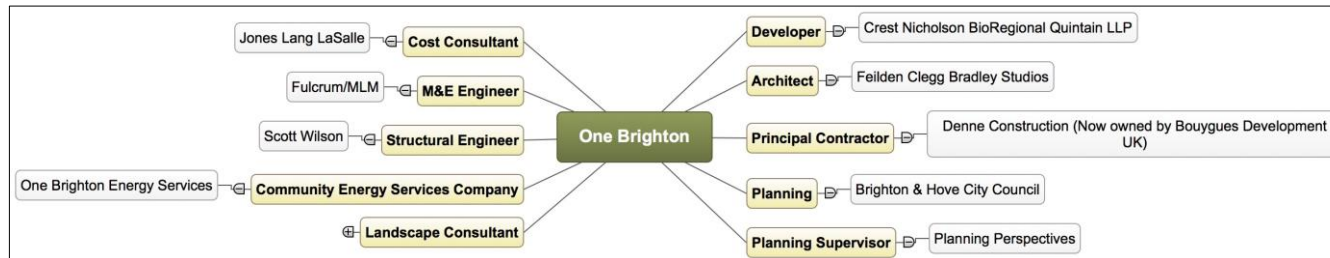


Figure 2: Key actors in the One Brighton development

The One Planet Living approach was incorporated into the whole building process, from design and materials to construction and activities on the building site. The role of the Sustainability Integrator was pivotal, as he effectively acted as an extra project manager, ensuring that One Planet Living principles were followed throughout the whole process of constructing One Brighton (interview comment, FCB Studios).

“His [Sustainability Integrator] role was really to scrutinise every decision that was made in terms of procurement of materials and training of the workers and everything, and he made sure that One Planet Living as ten principles were embedded throughout the whole process.” (interview comment, Sustainability Consultant)

Furthermore, Bioregional required that everyone involved in the project went through an ‘induction to change’. It was seen as a two-way process, combining Bioregional’s motives but also taking on board people’s views on what sustainability meant for them: *“It talked about what we wanted to do, but it also discussed with people what they thought about sustainability, and how they could apply it in their own lives.”* (interview comment, Bioregional).

“I think they [Bioregional] did a lot of pre-research, particularly on materials that might be used and sources of materials and set quite a tough agenda that it wasn’t just the end user in mind, but just the whole thing, from working with the planning authority at the beginning, engaging in that sustainability agenda to then how you delivered it. It was the materials, the workforce, the lifestyle of the workforce that was perhaps influenced during the construction, by them recognising particular food and sources of food and sources of material.” (interview comment, Crest Nicholson)

This approach worked well, helping to *“create a different environment and culture there”*, with most of the people involved in the project embracing sustainability, while there were also *“some real enthusiasts, and they brought the others on”* (interview comment, Bioregional).

The Sustainability Consultant, who had been facilitating the community engagement of the development, also took on a role during the construction stage, especially focusing on the development of the community part of the building – the Brighton Junction – and identifying potential tenants for it, as well as helping to establish a One Planet café for the workers of the construction site, which served local, organic food and raised awareness of the importance of healthy living (interview comment, Sustainability Consultant). The café was popular amongst the contractors: *“it was amazing how they embraced that more positive lifestyle”* (interview comment, Crest Nicholson). The Sustainability Consultant also helped to promote the workers’ café to the construction industry, and also helped with other smaller projects such as applying funding for the biomass boiler from the Department of Energy and Climate Change (DECC).

“One of the things they wanted to do on the site was create a café for the construction workers, sort of, One Planet Café with locally sourced food and so on; which would be quite a unique thing for the construction industry as well. It was about helping to make that

project happen so working with the team to find someone who could run that. And then I supported the promotional side of that as well so went and took photos of the workers eating carrots and things. Got them out into things like Construction News, so that we could get the word out a bit more about what we were trying to do on this project.” (interview comment, Sustainability Consultant).

The construction stage of One Brighton involved a lot of hard work, persistence and attention to detail, as well as the ability especially for Bioregional and their team to meet challenges along the way, such as ensuring that certain materials, like getting the right mix of concrete, were used. The Sustainability Integrator’s role especially was key in ensuring that even during challenging times, sustainability was not compromised.

“I think everything that was trying to be done on the project was a challenge one way or another to overcome: From trying to achieve the level of airtightness we wanted; to getting the right supply of materials and systems we wanted to use; to co-ordination of the design; to the mix of concrete that was being specified.” (interview comment, FCB Studios).

FCB Studios had architects on the design team who had training in specific environmental design courses as well as in architecture, in order to have *“the right level of expertise to meet their [developer’s] expectations and their requirements”* (interview comment, FCB Studios). However, from Bioregional’s point of view, it was more about having the right attitude to construction than having a certain skills set.

“It wasn’t so much the skills as an attitude to development. So we were very consultative with the local community, really listening to them, helping shape the design. Worked very closely with the council as well. So it was an attitude, rather than particular skills needed.” (interview comment, Bioregional).

Another challenge during construction was the global financial crash that hit the UK housing sector hard in 2008, with people unable to get mortgages and several building projects not materialising. For One Brighton fortunately both planning and funding had been secured before the crash (interview comment, Sustainability Consultant). However, it did mean that some flats took longer to sell than was

initially expected. However, One Brighton returned a profit when most projects were losing money and was, for example, the best performing project in Crest Nicholson's portfolio at the time.

"There was a very difficult period during the construction phase where no flats were being sold, it was all quite, well very challenging. Because normally you would expect to be building, people would be coming along, buying them off plan and none of that was happening I think it was really a big, yes, it is a huge shame. One Brighton has succeeded in spite of all of that because I think no one else was building in Brighton partly. We were the only people who were putting new flats on to the market but also there was, things started to recover after a couple of years of real turmoil and people then started to be able to get mortgages again a bit." (interview comment, Sustainability Consultant).

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

As One Brighton was built to the principles of One Planet Living, energy, as well as energy efficiency, was a key part in meeting sustainability objectives for the site. This was key in terms of not just using renewable energy sources, but ensuring that the development was energy efficient so that there would be a need to use less energy in the first place (interview comment, Sustainability Consultant).

"It was taking everything a step further than people normally do. So, we were better on U-values than everybody else at the time. We were better on airtightness, particularly on energy and impact of materials." (interview comment, FCB Studios).

The building is heated by a biomass boiler, for which the developers secured funding from DECC's Low Carbon Buildings Programme (interview comment, Bioregional) and it also had solar panels on the roof. Initially the plans had included rooftop wind turbines, but the development team sought the planning authority's permission to install solar PVs instead as that technology was better proven than rooftop wind turbines (interview comment, Brighton & Hove City Council).

"When it came to installing the wind turbines the developer researched the effectiveness of building mounted turbines and found they would be less effective than hoped. They asked

to alter plans and install photovoltaic panels instead of turbines. The planning authority accepted the application to vary planning conditions, especially since there was evidence that photovoltaic technology would be more reliable as an electricity generating technology.” (interview comment, Brighton & Hove City Council).

In order to achieve zero carbon, Bioregional had plans to develop an off-site wind turbine, though those plans never materialised. (interview comment, Brighton & Hove City Council). However, as part of the development a One Brighton Energy Services Company was set up, which operates as an energy services company (ESCO) and is a wholly owned subsidiary of One Brighton Management Company – a resident-owned management company whose three directors are the Sustainability Consultant, CEO of Bioregional and Neil Williams. The One Brighton Energy Services Company is responsible for sourcing all the energy that is used on site, as well as billing and metering (interview comment, Sustainability Consultant). In addition to having a biomass boiler and solar panels on site, the company bulk purchases guaranteed renewable energy supply as part of a Zero Carbon strategy *“which has been very cost-effective for our residents”* (interview comment, Bioregional). Subsequent to starting operation, the company had problems with the biomass boiler. One of the reasons for this was seen to be the early stage of the young biomass industry in the UK: *“the whole industry, from design through to supply of the boilers, through to maintenance of the boilers, through to fuel supply, was still in its infancy”* (interview comment, Bioregional). This meant that many of the technologies had very little practical experiences behind them in the UK. So a decision was made to replace the old boiler and a new, upgraded, version was installed in 2016. It has been running since January which means that the One Brighton development has been running as a true Zero Carbon development. Currently energy is supplied at about 30% lower cost than a typical equivalent home.

6. Post-construction: testing expectations of One Planet Living (2010 onwards)

One Brighton was completed in 2010 and for Bioregional the project has worked well, apart from the problems with the Biomass boiler. Both the building fabric and the car-free aspects of the site have worked well and the project generated very good profits as the apartments sold well (interview comment, Bioregional). However, while all the residential properties were either sold or rented out in One Brighton, the financial crash and following austerity measures by the UK government affected the

final shape of the community space at Brighton Junction, as many community organisations that had planned to move into the building had their funding cut in 2010 and ceased to exist (interview comment, Sustainability Consultant).

“The crash happened in 2008 but then we still had two years of a Labour Government. We didn’t have an Election until 2010 in this country and that is when the Conservatives and the Lib Dems came in to form a new Government and the age of austerity began after 2010. So for two years into the crash we still had quite high levels of public spending going on and community organisations were doing quite well for a further two years. And it was only after 2010 that things started to really contract from the voluntary sectors’ point of view. So when we opened that building - I think it was in 2010 Brighton Junction - those organisations that we had lined up all of them were badly effected by that sudden cut-off of public funding. We had organisations like the Business Community Partnership that just disappeared and they were a big organisation before employing 15/20 people that were going to move in.” (interview comment, Sustainability Consultant).

This meant that instead of opening full, Brighton Junction opened with very few people in it. By 2016 thought the development was completely filled.

6.1. A community organisation’s experience of One Brighton

One local community organisation that had been attracted to One Brighton from the early days was Friends Centre, which became one of the largest tenants in One Brighton and also bought three business units at the building and is a tenant in the reception area of Brighton Junction.

Friends Centre had got involved in One Brighton at the construction stage, approximately from 2008 onwards and worked with Ethical Property and architects FCB Studios to manage the Friends Centre’s move to the One Brighton building.

Established in 1945 by the Quakers, Friends Centre is an adult education centre which provides courses for approximately 1,200 learners each year. Courses range from art and craft, IT, mental health awareness and counselling skills to adult literacy and numeracy, as well as English for Speakers of Other Languages (ESOL) classes. The Centre also provides careers advice through a separate

contract with National Careers. Before spotting the One Brighton development, for three to four years Friends Centre had been looking for a new space that would be able to incorporate both office space and classrooms. Friends Centre was attracted to One Brighton on the basis of its initial *“idea that it was going to be the greenest multiuse building in the UK”*, while being a community space and having a very central location (interview comment, Friends Centre).

Furthermore, the Friends Centre’s Principal at the time had envisioned the community space especially as a place where Friends Centre could *“engage people in green activities and prepare them for the green work market”*, though these did not materialise as the Principal retired. (interview comment, Friends Centre). However, the Friends Centre did develop a concept of One Planet Learning courses, courses in skills like knitting and recycling clothes, which they ran for about five years, but have since marketed them as ordinary courses (interview comment, Friends Centre).

In terms of Brighton Junction, the community space opened initially with less organisations than expected, and even though many charities did move in, many also left or ceased to exist following the financial crash. For some who did move into the building, this was somewhat a disappointment, especially the fact that due to financial constraints the large community kitchen did not materialise but instead became meeting rooms (interview comment, Friends Centre).

However, One Brighton succeeded eventually in having a café on site which has been a positive aspect of the development. But the overall community experience has been less for Friends Centre than what they expected, given that many community organisations which were due to move in, could not either afford to do that or they ceased to exist. (interview comment, Friends Centre).

The interviewee mentioned that while the building was very warm, very dry and clean, some of the other technical aspects had not worked well, especially the mechanical ventilation system and the biomass boiler.

“At the beginning it was very difficult, actually. The snagging list was incredibly long and there were actually a lot of problems with the green innovations of the building. So the mechanical and ventilation system, for instance, was so loud that it sounded like a 747

taking off, and I said, “We can’t do this. We just can’t have this. This won’t work for classrooms.” (interview comment, Friends Centre)

The air tightness of the building has also caused some Friends Centre employees to complain about feeling ill (interview comment, Friends Centre).

“So that has been a disappointment, the whole mechanical ventilation thing. It has been interesting that people feel that general feeling of being very stifled, not enough air in the building, lots of headaches, migraines, people being sick much more than they used to be. I don’t know if it’s sick building syndrome, or not.” (interview comment, Friends Centre).

However, most of the problems with technology have been addressed and the changes to the ventilation system and change of windows have meant that Brighton Junction is a better place to work at now, even though the mechanical ventilation is still noisy (interview comment, Friends Centre). Despite the initial teething problems, users of the building have generally been happy and *“a lot of people that hire rooms absolutely love it here and really like the atmosphere in the café”* (interview comment, Friends Centre).

Some community aspects of One Brighton had a delayed start. A Community Interest Company has been set up to deliver the One Planet Living aspirations.

“There has been a time delay in actually realising some of this stuff and there is more we can do and there is more that we want to do to try and push the One Planet Living message. And the Community Interest Company has got a role to play in that, the Energy Company has as well. That is why I am still very excited and committed to the project really.” (interview comment, Sustainability Consultant).

6.2. A resident’s experience of One Brighton

Overall, Bioregional has received good customer satisfaction from the residents (interview comment, Bioregional). One resident, a photographer and her family, moved to One Brighton when it was built, renting their apartment through Moat Housing, a housing association operating in the South East of England. The family were especially attracted to the central location of One Brighton and the fact that the property had three bedrooms, though sustainability of the building was quite important too: *“We*

feel privileged that we have been given the opportunity to live here and reduce our carbon footprint.” (interview comment, One Brighton resident).

Before moving in the family expected everything to be perfect, given that their new home was in a brand new building. They were given a basic introduction to the building and *“a welcome pack that explained everything about the building and how it was at the time the forerunner in ecobuild in England”* (interview comment, One Brighton resident). The family has been reasonably satisfied with their home so far and have particularly enjoyed the roof allotment, as well as the triple glazing which has dramatically reduced noise and heat loss (interview comment, One Brighton resident). However, some of their initial expectations of living in a perfect new building were somewhat dampened by the fact that they experienced years of heating system problems and damp problems in one bedroom - which have since been rectified. Furthermore, the service charges on the apartment are very high and as One Brighton is a car-free development, lack of parking has been an issue (interview comment, One Brighton resident). There is disabled parking available at One Brighton, but it is mostly unused (interview comment, One Brighton resident). Overall, the experience of living in One Brighton has been a positive one, with the resident noting that *“it is good to know that we are starting to make a difference, starting from the home.”*

7. Learning: from post-occupancy evaluation to showcasing a sustainable building

In developing One Brighton, Bioregional’s key aim was to develop apartments in an urban site, which would be based on One Planet Living principles and would be cost-effective and profitable. Bioregional wanted to especially build on the learning from BedZED:

“BedZED was good in many ways, but it wasn't cost-effective, so we wanted to learn the lessons, to show how we could do something cost-effectively. That was the main motivating factor.” (interview comment, Bioregional)

While BedZED had been a success in several ways, not least by acting as an example of low energy housing, it had also faced several problems, including a Combined Heat and Power plant that never really worked properly. Nevertheless, there were many lessons that could be built on from BedZED,

especially in relation to taking a green lifestyle approach and for example developing a completely car-free building, which was possible due to the One Brighton site's central location and good access to public transport links. Furthermore, Bioregional had learnt from BedZED that simple things worked best and hence they simplified their technological approach at One Brighton. This included taking a very simple approach to building fabric and while BedZED had incorporated a problematic CHP-system, at One Brighton an energy services company was set up, which bulk purchases the guaranteed green electricity.

From the beginning of the One Brighton project, key objective of the project was also to include post-occupancy evaluation for the project to evaluate how the building performs. Bioregional wanted to set up their own estates management, but given that they did not build more projects at the time, they outsourced the estates management to Stiles Harold Williams (interview comment, Bioregional). However, Bioregional still collects all the energy data. Again in this respect, Bioregional has been different to many other mainstream building developers, who often build a project and leave the site once residents move in (interview comment, Sustainability Consultant).

“They [Bioregional] have got this very, longer term commitment to the site. So whereas one of the other neighbouring developments on that site, I think it is quite a common industry model; a builder will come on, build housing, sell it, walk away. Whereas Bioregional took a completely different view and said, “Actually we’re very committed to the long-term.” So the people who were involved in those beginnings are still very much involved; Pete Halsall and Pooran are still very much involved in that project and following it and talking to the residents. And making sure that that commitment is very strong and I think that is fantastic. Every builder should do that actually.” (interview comment, Sustainability Consultant).

From a design point of view, key aspects for improved performance have been heating and ventilation in an airtight building, while a challenge during the project was *“the transition from having an environmental services engineer at early stages, to a mechanical and electrical subcontractor”* which posed issues later (interview comment, FCB Studios).

“When you’re designing extremely low energy and very efficient buildings, there is a greater need to focus on thermal comfort and overheating and ventilation at a very early stage in the building. And a need for that to be more co-ordinated.” (interview comment, interview comment, FCB Studios).

As for Crest Nicholson, One Brighton has provided an opportunity to learn about delivering low energy buildings, especially in relation to issues such as the importance of heating sources and cooling (interview comment, Crest Nicholson). Crest Nicholson has also taken on board technologies such as combined heat and power and have installed those on sites in Bath and Southampton for example. This learning has been beneficial for the company in acquiring future sites for the business, and which they have been since delivering.

“We were very successful in being awarded a number of projects where we were able to use the learning from One Brighton within our bid documents to procure more land. As you know, from a developer perspective, land is the material that you need to prosper.” (interview comment, Crest Nicholson)

While a knowledgeable design team is key to any building project, projects like One Brighton need “a strong client with strong ambitions and brief, who’s willing to put the time and effort into seeing those through to fruition”, which Bioregional certainly did (interview comment, FCB Studios). Furthermore, Bioregional takes an integrated approach from the beginning by looking at “everything from design, construction, estates management, we do all of that up front”, with a view that “maintenance of the systems is as important as design up front” (interview comment, Bioregional).

What was unique about One Brighton, was the inclusion of One Planet Living principles to the whole construction process, including keeping a very close eye on the choice of materials throughout the supply chain, also recognised by partner Crest Nicholson and taking some of the sustainability agenda on their business (interview comment, Crest Nicholson).

“That was a particular success for us in recognising that it’s not just the end users that actually benefited from the project, but the workforce that were constructing it enjoyed working within a project and reinforcing a lot of the agenda at that time. Some of the

choices of materials we might have been able to buy cheaper, but it wouldn't have been from sustainable sources. It made the company look not only at itself inwardly, but also our supply chain, so it's not just the workforce on the project, but the supply chain that contributed as well." (interview comment, Crest Nicholson).

Key learning for many partners from the project has been the focus on whole sustainable lifestyles, not only focusing on energy consumption but also including transport and food as key aspects of sustainable building designs (interview comment, FCB Studios). Furthermore, while the technology and knowledge exist to produce low-energy buildings, *"the challenge is to make them good places to live in and enjoyable spaces that people want to live in. So, I think that's been part of the big learning for us from the project."* (interview comment, FCB Studios).

However, not all residents have taken on board the One Planet Living concept, partly due to the fact that as a city centre development, One Brighton has had a relatively transient population and for example many apartments have been let by overseas students who have come to attend the nearby language school (interview comment, Bioregional).

"I've seen people really trashing the joint in this area. I've seen the green caretaker really under so much stress saying things of a morning like " I've got three double beds out here today, and somebody has just dumped all of this here and that here". Residents that just don't care. They don't give a tuppence. The other thing that's hard about it is it's mixed between affordable and completely non-affordable. There seem to be a lot of students who've had a flat bought for them, including many overseas students, who stay here for a year, they're very, very rich. They then leave, leaving behind them all their designer clothes, they just leave, they just clear out, not actually clearing their flat at all. They just go. Then the caretaker is left to deal with all of that." (interview comment, Friends Centre).

Friends Centre is trying to engage more with all residents through the One Brighton CIC helping to fund concessions to residents for non-accredited courses. The interviewee pointed out that it is important for organisations or people to realise that when they move into new buildings there might be teething problems and issues that have to be learnt and dealt with (interview comment, Friends Centre).

With the concept of One Planet Living being at the centre of the plans for One Brighton, there has been an opportunity to highlight these types of developments on a wider scale. One Brighton has acted as a showcase of a sustainable building design, and there have been many visits and tours around the building. It has also been published in publications and journals as well as in research projects, PhD's and Master's theses (interview comment, FCB Studios). Through the One Planet Communities Network, One Brighton has acted as an example to other projects in the US, Canada, France and Australia (interview comment, Bioregional).

“Bioregional’s ethos which is One Planet living, to create a fantastic One Planet living development in the centre of Brighton just seemed like an amazing opportunity. Building on the experience they had had with creating BedZED, to do a really big project in a city like Brighton I thought would really push the boundaries of low carbon development in this country; and make everyone really aware of what the potential was.” (interview comment, Sustainability Consultant)

The Sustainability Consultant’s role too especially changed a lot during the project, as he took on various positions and responsibilities, including roles as a director of One Brighton CIC and a director of One Brighton Energy Services. For him personally, learning from the project has been on-going as with buildings *“we are in a live situation”* (interview comment, Sustainability Consultant).

As for Brighton and Hove City Council, the One Brighton development has acted not only as a learning point but also an opportunity for the Council to highlight their sustainability credentials, helping to create the city as *“a sustainability hotspot for construction”* and encourage other developers (interview comment, Brighton & Hove City Council).

“It’s been really helpful for us, having that project in Brighton, because we’ve all learnt a lot from it. But also it’s become a beacon in Brighton that we can say, “This developer achieved it. We’d like you to try and achieve the same.” So it’s been really helpful.” (interview comment, Brighton & Hove City Council)

Crest Nicholson and Bioregional both praised the supportive role that Brighton and Hove City Council had in the project. The working relationship between Bioregional and the Council was exceptionally good, and Bioregional built a good relationship with the department head Martin Randall (interview comment, Bioregional).

“Credit to Brighton Council for taking that rather forward thinking approach, but there are a number of other local authorities where it is very difficult to get buy in and it’s pretty much working to rules and regulations or you don’t make any progress at all.” (interview comment, Crest Nicholson)

For Bioregional, it was especially important to get the Council’s support, given that Bioregional were pushing boundaries especially with the car-free aspects of the development (interview comment, Bioregional). Furthermore, *“the Council and the developer have jointly won an award together, for what was achieved on that site”* (interview comment, Brighton & Hove City Council). The One Brighton development fitted well within the wider context of Brighton as a city that attracts people who have green, environmental values (interview comment, Brighton & Hove City Council) and have been active in feeding to the city’s planning policy development.

“We have a community in Brighton and Hove that is very environmental, quite a green community, quite a lot of academics. So when you have a mixture of environmentalists that are also academics, and you do a consultation to say, “What should the building standards be for Brighton and Hove?” we got a strong voice saying, “We want them to be as high as they can.” And the fact that we had One Brighton helped to make the case to show that is was viable.” (interview comment, Brighton & Hove City Council).

For Bioregional, One Brighton showed that it is possible to achieve a 90% carbon saving and do it profitably (interview comment, Bioregional). Following One Brighton, Bioregional wanted to develop more projects, but with the financial crisis, development stopped and the company is only now starting to look at other sites again (interview comment, Bioregional). However, the financial crisis has affected the building industry as a whole and as the government has removed some of the regulatory framework such as the requirement for new zero carbon homes, *“there has been a reversion back to compliance, away from excellence in sustainability”* (interview comment, Bioregional), despite the fact

that much of the actual technologies for low energy housing are now available and there are customers who value them.

Furthermore, the experience from both BedZED and One Brighton has shown that especially policies addressing the sustainability of housing cannot often recognise how complex building projects are.

“Recognising complexities of development actually means that you must keep the regulation much simpler than it is, and much more focused on what's actually deliverable on site.” (interview comment, Bioregional)

In potential new projects, Bioregional would do certain things differently, like choosing an electric-only heating and bulk purchasing guaranteed green electricity, which they estimate would save energy bills by 40%, construction costs by 5% and result in 90-100% carbon saving (interview comment, Bioregional).

There are large opportunities in low energy housing, with several developers undertaking excellent projects, but the key question for the sector is to what extent green buildings become the norm (interview comment, Bioregional). Especially at a time when government has limited interest in green building (interview comment, Sustainability Consultant), projects like One Brighton need leadership at all levels, e.g. at the top of the companies as well as at local authorities (interview comment, Crest Nicholson).

“The expression I use for enlightened local authorities is civic leadership, where there is a drive and energy from councillors and officers to make something happen. It is all too easy just to have a standard template of projects or of floor prints or house types that developers use as they're tried and tested, whereas I think to make progress, you need to have part of your business that is prepared to stretch these resources and challenge itself, and that's what projects like One Brighton did. I mean today it wouldn't, but then it did.” (interview comment, Crest Nicholson).

Furthermore, there is a need for a larger societal shift, to really drive the change in the housing sector - not only for creating more demand for low energy housing but also for ensuring that buildings meet design, environmental and resident wellbeing objectives (interview comment, FCB Studios).

8. Summary

The One Brighton project is a first development of its kind designed and built to the principles of One Planet Living. The project was a vision of Bioregional, a developer which takes on a whole lifestyles approach to buildings. To date Bioregional has developed 350 homes in the UK in partnership with other developers (BedZED, One Brighton and Middlesbrough), and have advised several other projects around the world totalling \$30 billion of development.

By working together with a large national developer Crest Nicholson, engaging widely with the local community and working closely with Brighton and Hove City Council, Bioregional was able to develop a low energy building project which met both sustainability and profitability objectives. Despite challenges throughout the project, from design to construction and post-occupancy experience, Bioregional has addressed those one by one and has not shied away when problems such as a poorly working biomass boiler, have risen. In a city with strong green milieu, One Brighton has acted as an example of what sustainable buildings can achieve.

Timeline

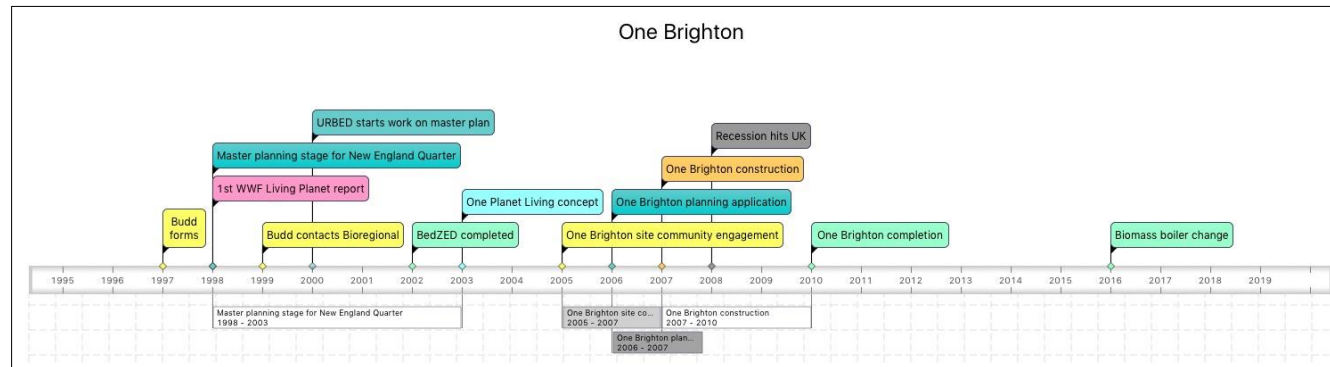


Figure 3: One Brighton timeline

Data Sources

The case study is based on seven recorded and transcribed in-depth interviews carried out in person or via phone (in one case responses were received through email), attendance and notes from an on-site learning tour of One Brighton organised by UK Green Building Council⁹, informal meeting with Bioregional, and sources of background material such as Bioregional's case studies¹⁰ and Eco Open Houses archives¹¹.

References

¹ URBED 2009. New England Quarter, Brighton Mixed use development of former railway land, October 2009.

² The Land is Ours Newsletter 10, <http://tlio.org.uk/newsletter-7/>, and Corporate Watch, CHECKOUT CHUCKOUT: Food and Agriculture Report : 6 - Directory of local campaigns, <https://corporatwatch.org/content/checkout-chuckout-food-and-agriculture-report-6-directory-local-campaigns> [Accessed 27.05.2016]

³ Needle Collective & The Bash Street Kids, 2014. Ebb and Flow: Autonomy and Squatting in Brighton, 1973-2012. In: Van Der Steen, B., Katzeff, A. & Van Hoogenhuijze, L. (eds.) The City is Ours: Squatting and Autonomous Movements in Europe. Oakland, CA: PM Press.

⁴ URBED, Brighton New England Quarter, <http://urbed.coop/projects/brighton-new-england-quarter> [Accessed 27.05.2016]

⁵ Brighton Peace and Environment Centre: <http://www.bpec.org> [Accessed 27.05.2016]

⁶ BedZED is located in South London, has 100 homes, community facilities, a college and office space, housing for example the headquarters of Bioregional: <http://www.bioregional.com/BedZED/> [Accessed 27.05.2016]

⁷ WWF Living Planet Reports have been published every two years since 1998. Previous reports are accessible from http://wwf.panda.org/about_our_earth/all_publications/living_planet_report/living_planet_report_timeline/ [Accessed 27.05.2016]

⁸ <http://www.bioregional.com/oneplanetliving/>

⁹ UK Green Building Council: <http://www.ukgbc.org> [Accessed 27.05.2016]

¹⁰ One Brighton: <http://www.bioregional.com/one-brighton/> [Accessed 27.05.2016]

¹¹ Eco Open Houses Brighton & Hove: <http://www.ecoopenhouses.org/index.html> [Accessed 27.05.2016]