

Bristol Housing Festival
Lessons Learnt Series: 2
October 2020



Hope Rise

Innovation in Practice



LESSONS LEARNT REPORTING

The Bristol One City Approach aims to make Bristol a fair, healthy and sustainable city by leveraging public, private, voluntary and third sector collaboration around a shared vision for 2050.

Faced with universal environmental, economic and social challenges, this joined-up approach calls for collaborative solutions that address specific needs and contribute to making Bristol a city of hope and aspiration.

The One City Plan sets out Bristol's aspiration to become a city where:

Everybody has access to affordable housing in a safe, thriving community.

Bristol Housing Festival partners with the One City office to champion, enable and share lessons learnt from collaborative action in housing.

The development of the Modern Methods of Construction (MMC) sector in housing has created a window of opportunity for system-wide, structural change in the delivery and lived experience of new housing, but we're not just interested in new ways to build houses, we're interested in new ways of thinking about the role of housing in creating great places that support communities.

Bristol Housing Festival is bringing healthy and resilient communities to the forefront of the conversation on housing and is a platform for action-learning, sharing what works and what doesn't, and identifying opportunities for improvement.

We believe that sharing lessons learnt is key to providing valuable insight for future developers and collaborators and maximising the rate at which best practice is advanced, affecting positive change for society.

In this series, we interview project teams delivering MMC housing in the South West to hear their stories, highlight outcomes and produce evidence-based lessons learnt reports, which can be shared widely to support positive growth in the MMC sector.

EDITOR'S SUMMARY

Hope Rise is an innovative mixed community of young people in a development of 11 ZED PODS (zero carbon, modular starter homes), constructed **above** the Chalks Road public car park in St George, Bristol. It came about through a unique partnership between Bristol City Council, the Bristol Housing Festival, ZED PODS and the YMCA, who share a vision for building affordable, quality and energy-efficient accommodation for young people in the city.

It has been a privilege to explore the details of this pioneering, community focused MMC housing development with the people involved. The project went from concept to completion in two years, beginning with a ZEDpod exhibited at the Bristol Housing Festival expo in October 2018 and culminating in the first residents moving in in November 2020. Before the ZED PODS had been fabricated this project had already become a multi award-winning scheme, with the concept of using 'air-rights' over car parks to increase the supply of land and tackle the affordability of new homes, capturing people's collective imagination and drawing people into this exciting story.

Unpacking this story with those involved, it is clear that this innovative development has captivated interest because of three interrelated threads. Firstly, the technical and environmental potential of this precision engineered MMC housing solution as a way of providing quality new homes at pace. Secondly, the construct of utilising air-rights to build affordable homes, by 'increasing' land-supply. Thirdly, the collaborative approach to community-motivated place-making and community-reliant place-keeping, that has been integral to the development of this scheme.

Whether you're interested in the technical details of the build and fit out, or the process of selecting residents and setting up the community, we trust you'll find something to learn from this project's story. For us, it has become evident that this project was driven by the desire to achieve positive outcomes for future young residents, and this people-centred approach was critical in channelling the effort, investment and political support needed to make Hope Rise a reality.

We expect you'll enjoy some of the comments and tweets from the design team, which we've reproduced in the margins throughout this document.

We would like to thank everyone involved for their hard work and willingness to share their lessons learnt and experience.

Dr Ellen Grist,
Research and Evaluation Lead
Bristol Housing Festival



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1.0 PROJECT OVERVIEW & INITIATION

HOW THE PROJECT BEGAN

A ZED POD was showcased at Futurebuild in March 2018, where it was introduced as *'the low-carbon affordable home of the future'*. Jez Sweetland, Project Director of the Bristol Housing Festival, who attended this exhibition, recalls that the queue to see inside the ZED POD was so long that he had to give up, and just satisfy his curiosity by reading the posters. He was impressed by the quality, sustainability and innovation around land-use, which left him wondering, *'what would it take to land this kind of innovative solution in Bristol?'* He remembers reflecting, *'why is this technology not being deployed in the real world, and seemingly stuck in industry or academic silos?'*

Following Futurebuild ZED PODS was one of six modular providers who responded to an invitation to exhibit their modular home as part of Bristol Housing Festival's inaugural Expo in October 2018. This public exhibition on Waterfront Square, Bristol attracted 6,124 visitors over 17 days and was an opportunity to look around the ZED POD.



ZED POD

Bristol Housing Festival Inaugural Expo, Oct 2018

"What would it take to land this kind of innovative solution in Bristol?"

Bristol Housing Festival

"ZED PODS became 'we could find a car park'- it's not taking from existing land supply, it's creating new land supply. Again, so much of the challenge is how do you allocate land through the right partnerships... this was almost like a free pass..."

Bristol Housing Festival

A ZED POD at the Bristol Housing Festival Expo 2018 courtesy of ZED PODS

“Coming out of the Bristol Housing Festival, this application for off-site factory constructed housing, is the first opportunity to test whether housing solutions can be accommodated on Council owned public car parks and other sites.”

Planning Committee Report

“The conversation between the City Council, ZED PODS and the Housing Festival was tremendously exciting because ZED PODS had this product, using well...air, which opened up the opportunity to overcome the issue of land in the affordability equation.”

YMCA Bristol

[YMCA Bristol](#)

[The Bristol Wing](#)



Bristol Housing Festival Expo 2018 courtesy of @sighjones

At the Bristol Housing Festival’s launch event, Councillor Paul Smith (Bristol City Council’s Cabinet Member for Housing at that time), announced to an audience of 300 gathered at City Hall, that Bristol City Council were committed to buying six ZED POD homes. The expectation was that these six new homes would be offered to individuals in housing crisis within six months, subject to planning.

At this time YMCA Bristol were struggling to identify move-on housing for individuals living in ‘short-term’ emergency accommodation that they had created, for young people in crisis, in the Bristol Wing backpackers’ hostel. They recognised the need to move away from just thinking about units of accommodation, to thinking about creating communities, in which young people could ‘[belong, contribute and thrive](#)’. Conscious that it was the land-value that was making housing unaffordable for young people, they were actively looking at solutions that made creative use of land.

The Bristol Housing Festival played an active role in joining up these two stories and the YMCA was brought on board as part of the core team delivering the ZED PODS project for young people in housing crisis.

ZED PODS and YMCA Bristol were lent the support of Councillors and were given a number of possible sites to look at. ZED PODS were keen to deliver a car-free, affordable housing development, so wanted a site with really good transport links and easy access to

a supermarket. Similarly, YMCA Bristol wanted a site with strong local community and good access to amenities, jobs and training opportunities for young people.

The car park on Chalks Road, which provided public parking for the shops on Church Road and the much-loved St George Park, was identified by both parties as the location with the best potential. As well as being located close to local amenities and surrounded by mature trees, the site was flat and had good access (a wide, step-free entrance) so it lent itself to a modular development.

Identifying the right site was fundamental to the initiation and success of this project. Selection of the Chalks Road car park in St George, was a gamechanger for YMCA Bristol who described this site as a dream come true.

So, with a core team in place and a site identified, **the project began.**

VISION:

The ZED PODS development was a pilot project seeking to utilise innovative land use (air-rights over a car park), and the exceptional environmental performance of the modular ZEDpod product, to demonstrate that high quality and truly affordable homes for young people can be delivered.

“We had dreams and ideas before this came along...I had a coffee with [the Project Director of Bristol Housing Festival] and we talked about things we were passionate about...mainly the overlap was this sense that it’s not just about building more houses, it’s about building good quality homes and making them affordable; it’s about building community, enabling people to thrive.”

YMCA, Bristol.

“When someone says let’s build some houses above a car park, your heart sinks when you’re thinking about quality and community...we don’t want to put young people in a car park, ...but St George Park is such a fantastic location...now that was a dream come true.”

YMCA, Bristol



St George Park courtesy of Graham Coleman Photography

2.0 PROJECT TEAM & STAKEHOLDERS

Relationships between individuals and organisations were critical to the success of this project. The final team for the Hope Rise project came together both through the political will at the Council to build affordable homes using MMC in Bristol, and through the organic development of relationships between the BHF and YMCA and their joint value in the importance of intentionally building community.

“Positivity was a key enabler - It felt like everyone was onboard and there was more ‘how can we help,’ than ‘we’re not interested!’”

Turley

“ZED PODS Operational Director knows his product inside-out and back-to-front, he’s got passion behind it - another great attribute to the success story really – he was a key enabler.”

Turley

“Principally it’s collaboration! That’s the reason we are where we are - which is fantastic!”

Turley

We have included extracts from our interviews to demonstrate the contributions of the partners and provide evidence of the collaborative approach that enabled the project.

THE CORE PROJECT TEAM

| | |
|---------------------------------|---|
| Bristol City Council | Landowner, developer, lettings agent and landlord (client) |
| ZED PODS | MMC designer, supplier, installer & Post-Occupancy Evaluation (POE) partner |
| YMCA | Charity supporting young people who are homeless, or at risk of homelessness (client) |
| Bristol Housing Festival | MMC champion and enabler. Post Occupancy Evaluation lead. |

PROJECT STAKEHOLDERS

| | |
|--|---|
| Michelmores | Providers of Legal Advice |
| St George Local Residents | Future neighbours of new residents |
| SWPA | Procurement Framework Provider |
| Turley | Planning & Development Consultancy |
| Impact Modular (formerly Lesko) | Manufacturing facility and main contractor |
| Commonweal Housing | Funded the Post Occupancy Evaluation (POE) |
| University of the West of England (UWE) | POE partner and Grant4Growth POE funding |
| Centre for Thriving Places | POE partner |
| Upfest | Community design consultation & public art installation |

THE LOCAL COMMUNITY

As with any new development, a key stakeholder was the local community, so consultation with local residents, businesses and groups was key. A community event was organised for a Saturday in St George with all four key partners represented. Members of the local community came, voiced their concerns, many around the loss of car parking spaces. They were reassured to learn that the car park would remain in operation.

Fitting with other street art in St George, a competition was held for a Bristol artist, who was to be commissioned to design and install a mural on one of the Hope Rise gables. The winner, artist Kin-Dose, used an online questionnaire to gather thoughts and inspiration from the St George and Redfield community for the artwork, completed in October 2020 (see page 21 for further details).

STRATEGIC OBJECTIVES

This housing delivery project helped Bristol City Council towards the city's aims as outlined in the [One City Plan](#):

[By 2050, everybody has access to affordable housing in a safe, thriving community](#)

and also towards the [United Nations' Sustainable Development Goal 11.1](#):



By 2030, ensure access for all to adequate, safe and affordable housing and basic services.



Public Consultation in St George

"I was the connection with the community- I know them very well! I wasn't going to blind-side them. I will deliver good news and bad news and as far as I was concerned, I was delivering great news!"

Cllr Asher Craig

"That's how you integrate a new development into an existing one, by getting the community positively involved and them being able to see that actually 'we helped shape this'".

Turley

3.0 DESIGN & PLANNING

“The high-quality ZED PODS homes are built to higher standards than conventional houses, are super insulated, triple glazed, with heat recovery ventilation and lots of daylight. The solar roofs generate more energy than the houses consume and are designed to be low carbon with the lowest running costs possible.”

Design and Access Statement

“ZED PODS was such a well-thought through product, we didn’t hit many hurdles in terms of design.”

Turley

“While small and unconventional, ZED PODS offer light dual aspect spaces with thoughtful internal arrangements.”

City Design Group

The design of the ZED PODS modules is key to the success of this unique and ‘experimental’ development. The modules have been designed and detailed to be both highly energy efficient and Net Zero-Carbon in operation, to secure residents the lowest possible running costs. The environmental performance of these modular dwellings was critical in securing planning for this innovative development.

DESIGN

The terrace of ZED PODS homes at Chalks Rd is built on a raised platform over an existing Council-owned public car park. It comprises nine one-bedroom homes constructed of cross-laminated timber (CLT), bookended by two two-bedroom homes constructed of light-gauge steel. This innovative concept is being explored by Bristol City Council as an innovative way of increasing the land-supply for new housing.

The ZED PODS are elevated on a steel frame approximately 2.5m above ground level, allowing the car park to remain fully operational, with two parking spaces below each home. The Chalks Road development is intended to enable car-free living, with no spaces assigned to the residents, so that the car park continues to provide public car parking for the park and local shops. In fact, reconfiguration of the car park during the installation created an additional three bays, taking the total to 61, with re-whitelineing expected to improve the movement and safety of drivers and pedestrians. Additionally, six new electric vehicle (EV) charging points were introduced into the car park for public use as well as additional cycle parking.



ZED PODS development Chalks Road, render courtesy of ZED PODS

The modular ZED PODS starter homes are open plan with an integrated kitchen and living area on the ground floor. The one-bedroom pod has a gross area of 39m², with a bedroom, bathroom and in-built wardrobe on a second storey mezzanine, that covers approximately 75% of the first-floor space. This produces a substantial double storey height space, which contributes the sense of space and daylight. The two-bedroom ZED PODS have a gross area of 70m², with a wider footprint and two bedrooms on the second floor. Additionally, each home has its own balcony (one-bedroom module) or enclosed conservatory (two-bedroom module).

The two-storey volumetric homes are fabricated in two sections in the factory. ZED PODS are built and certified to BOPAS, ISO 9001 and Q-assure quality standards. The homes are all A1 rated for fire safety, with each home having multiple escape routes and integrated alert and sprinkler systems.

The homes have been optimised for energy efficiency and the lowest possible running costs, with solar panels to generate renewable electricity in the day, quiet running micro air-source heat pumps for low-energy heating, controlled ventilation which recovers usable heat from inside the building whilst bringing in fresh air, triple glazing, LED lighting and energy efficient appliances.

The ZED PODS were installed with 2.6kw PV for 1 bed dwellings and 3.4kw PV for 2 bed dwellings, with the following outputs 2510kwh and 3370kwh PA.

Notably this form of housing development, over an existing car park, does not increase the risk of flooding, as the development site is already hard surfaced (impermeable).

To mitigate the risk of graffiti a mural was commissioned for the eastern gable façade (facing the car-park entrance), providing a landmark feature for users of the car park and wider park. This piece of public art also provided opportunities to engage the local community in the design and enhance local ownership of the finished development.

“A ZED POD has all the sustainability required to get to zero-carbon home so it will have very low running costs and it will generate more energy than it consumes and is said to have negative carbon emissions. Over the lifetime of the building, it will be a carbon-neutral building.”
ZED PODS



*ZED POD showcased at the Bristol Housing Festival
courtesy of @sighjones*

“When you start using a public car park for housing, the very principle there throws up interesting planning conundrums... Where will the bins go, how it will be lit?... All the detailed practical stuff is often much more important to people than the design!”

BCC Planning

“In the past we have had issues with antisocial behaviour within the carpark, I believe that this development will allow better observation of the car park and make it a less desirable location for antisocial activity”

*Local Ward Councillor,
Letter of support*

[You can check out the full Design and Access statement for the project \(which includes the floor plans\) here.](#)

[You can read the full planning report here.](#)

PLANNING

ZED PODS took the planning risk on the scheme and funded the planning and consultation process to demonstrate their commitment to their product and the scheme. ZED PODS needed to prove that gaining planning for a building above a carpark was possible.

Planning and development consultancy Turley were brought on board as part of the pre-application process, to talk the core project team through how to engage with the local community and other project stakeholders about this innovative scheme.

The design team met with local Councillors, as well as community action groups, including the St George Community Network and the Church Road Action Group (17th February 2019). In addition, a drop-in public consultation event was held at The Beehive Centre on Friday 1st March (3-8pm). Key concerns raised included a possible loss of parking, potential anti-social behaviour (including graffiti) and loss of access to the park, especially for the annual [RedFest Festival](#).

RECOMMENDATION:

Ensure the planning application clearly communicates how the proposed development will relate to its surroundings and how access will work/be maintained.

RECOMMENDATION:

Submit a pre-app as early as possible, to flush out any potential issues. If you know the issues early you can challenge them head on.

ZED PODS submitted the scheme for Full Planning Approval at the end of April ([Planning Portal reference 19/02090/F](#)). Planning permission for the project, (11 no residential dwellings (Use class C3) elevated above an existing public car park and alterations to the existing car park and associated works), was granted full planning permission on the 10th July 2019. The planning report outlined key benefits of the proposed development, noting it would:

- Contribute positively to the meeting of housing needs for both students and young people.
- Be an appropriate reuse of a car park, considered to be surplus to requirements
- Meet immediate, short term needs for affordable housing for vulnerable people with tenancies of one to two years

- Contribute positively to the housing mix in the area

CHALLENGE:

One of the challenges identified by the planning officers, was that there is no specific space standard included in the [Nationally Described Space Standards \(NDSS\)](#), providing for a 1.5 storey (ground floor & mezzanine) dwelling for a single occupant.

The two, two bed units were compliant with NDSS standards. As part of the planning application ZED PODS pulled together a raft of information, appointed a surveyor and got a robust report that said this is a suitable size for 1.5 story house, a quality design and complies with standards even though there is ambiguity.

The planning report reads: *'For this accommodation provision is made for 39 square metres of internal floor space and storage. In the absence of specific guidance on how to apply space standards to this modern form of housing delivery and mindful of the characteristics of the development, it is considered that the application proposal can be regarded as acceptable as set out below in the design section. However, it should be noted that these units are small and in recommending approval for them, your Officers are mindful of the high standard of accommodation that would be provided.'*

The full planning permission for this innovative scheme, tackled the novelty of the proposal in two ways. Firstly, one of the planning conditions was a post-occupancy report after 12 months of occupation (see section 7.0). Secondly, the permission expressly noted: *'The experimental nature of this application is demonstrated in the design comments received. This proposal is unlike any other application for residential development currently under consideration by the Local Planning Authority. For this reason, it cannot be regarded as creating any precedent at all for other residential development across the city.'* Planning Committee Report.

RECOMMENDATION:

Focus the application on how the proposal will work (e.g. how the homes will be plumbed in and powered).

RECOMMENDATION:

Ensure an open and constructive dialogue with the planning authority, in conjunction with a proactive approach to addressing specific areas of concern.

"It was achieving something so positive for the City as well as being sustainable, on a brownfield site...you dream of working on these types of projects when you're a student - this is the reason why you go into it!"

Turley



@AKellegherMRTPI

11 July 2019

It was an honour to work on this innovative project and I am proud to say that yesterday we gained planning consent for 11 ZED PODS in St George Park, Bristol - find out more in the link below. #Bristol @Bristol_HF @zedpods @turleyplanning @BristolCouncil @bristolpaul @MarvinJRees



@Bristol_HF

10 Jul 2019

Delighted that @zedpods secured planning approval today - huge credit to those involved for the courage to innovate solutions that offer sustainable, quality and affordable housing with a focus on community @BristolCouncil

4.0 PROCUREMENT & DELIVERY

“What generally happens with frameworks is there is a very long lead time, while people are considering their projects and how they are going to develop them, particularly for new housing, it usually takes up to nine months for something to come through.”

SWPA

SWPA – H2 Framework

“From our point of view, it was very straightforward. It is always down to the client to ensure they are happy with the terms of the framework. Good on them, local authorities are custodians of public money and should do that due diligence.”

SWPA

“[Procurement] shouldn’t have been as challenging as it was.”

Bristol City Council

PROCUREMENT

When the scheme went into planning, the intention was for the new homes to be owned and managed by a Housing Association or Registered Provider (RP). Following a review of the options, the decision was made that the homes would be built, owned and managed by Bristol City Council as part of the council’s Housing Revenue Account (HRA) [New Build Housing programme](#).

ZED PODS offered a [turnkey service](#) (Feasibility, Planning & Design, Manufacture and Installation) and were awarded the contract by direct award from a static framework. The [South West Procurement Alliance \(SWPA\)](#), part of the [LHC Group](#), provide [OJEU compliant procurement solutions](#) for public sector organisations across a number of sectors including construction. Their [NH2 framework \(Offsite Construction of New Homes\)](#), then in its second year, was specifically for the procurement of [Category 1 and 2](#) (volumetric and panelised) modular solutions. This framework has a high emphasis on delivering quality solutions, with suppliers being scored on a quality-price mix weighted 75% quality to 25% price.

[Impact Modular](#) (then Lesko Modular) were the highest scoring company in the ‘Enhanced Energy Performance’ sub-category of the volumetric building workstream, enabling a direct call-off of the ZED PODS system (one of the MMC products fabricated in Impact Modular’s manufacturing facility in Peterborough). ZED PODS have since been novated to the NH2 framework in their own right.

For SWPA a direct call-off was a straightforward procurement exercise. Bristol City Council, who at the time had not procured from a SWPA framework before, had additional due diligence checks to undertake in evaluating the suitability of the framework itself, which lengthened the procurement process.

RECOMMENDATION:

Review existing OJEU compliant frameworks for suppliers who could meet your project requirements, as a direct call off could save considerable time.

DELIVERY

On the strength of their previous experience of off-site modular projects, real-estate solicitors [Michelmores](#) were appointed by the Council to advise on the legal aspects of delivering this scheme. Michelmores had also co-authored the [Legal Guide to Off-Site](#), a publication commissioned by Constructing Excellence South West. This guide, which highlights the main legal points needing to be considered when adopting off-site modular construction.

RECOMMENDATION:

Secure expert legal advice to review contractual terms as a standard form of contract will not contain all the provisions necessary for offsite construction.

They advised using a published form of contract and opted for the [JCT Intermediate Contract \(with design\) \(JCT ICD\)](#). The benefit of this option was that both the Council and the Lesko Modular Group Limited (Lesko) were familiar with its terms. The JCT ICD already included provisions for dealing with advanced payments, Building Information Modelling, Intellectual property rights and liquidated damages. In addition, they added terms dealing with:

1. The design responsibility for the pods and the project
2. Ground conditions risk
3. [Build Offsite Property Assurance Scheme \(BOPAS\)](#) and accreditation of the contractor
4. ['Q' Assure](#) Build Limited latent defects policy (which is specifically written for off-site modular units)
5. Collateral warranties from the designers
6. Ownership and risk of damage to the units before installation

The design stage had to be signed-off before the units were manufactured, and the contract had to reflect the fact that most of Lesko's expenditure occurred before the units

“Both parties to this agreement had the desire to ensure that this project proceeded and therefore were willing to adapt their standard commercial terms to enable this project to commence. Without this level of cooperation and adaptation by both parties, it is likely that the project would have stalled.”

Michelmores

[Learn more about how Covid-19 affected the manufacturing process here.](#)



ZED PODS in the factory courtesy of ZED PODS

“We need to get internal people within the Council experienced on how to deliver modular buildings, so they can be part of it, part of the story”
Bristol City Council

“We got the right team in place and we’ve learnt an immense amount from this project”
Bristol City Council

“That is demonstration of what we can achieve if we start at the end, in terms of what is it we want to achieve and understand our roles within that and agree how we achieve it.”
Bristol City Council

were assembled on site. ZED PODS cash flowed the acquisition of materials and labour to enable the development to progress, demonstrating (as they had done during the planning phase), their commitment to making Hope Rise happen.

The form of contract and the commercial and legal terms have now been settled by the Council. As such, this form of contract (as amended) can be used on other offsite modular projects.

The client (BCC) considered appointing an external contract manager to oversee the delivery but recognized that this was something quite new, and as such a valuable learning opportunity for the in-house development team. Lesko was amenable to and offered 'a single point of responsibility', by providing all of the design, manufacturing, delivery and installation of the works for this project. Lesko's 'single point of responsibility' approach on a project of this size was certainly an advantage to the project.

RECOMMENDATION:

A turnkey solution can be beneficial in reducing the risk of errors arising at the interface between the site works and the modules.

“The interface between the site works and the modules is critical. One from a timing point of view, one from a project-costing point of view, one from a programme management point of view. That’s very important”
Bristol City Council

The Site Investigation was hampered by coronavirus restrictions. Alternative plant had to be identified and sourced that would enable operatives to remain socially distant. Greater efficiencies in terms of programme could have been achieved by carrying out the site Investigation at an earlier stage.

RECOMMENDATION:

Carry out the Site Investigation as early as possible to maximise efficiencies in the delivery programme.



The steel framed platform structure courtesy of ZED PODS

CHALLENGE:

Innovative products and systems demand additional time and resources for sensemaking, de-risking and solution finding, through the delivery process.

RECOMMENDATION:

Actively involve a cross-skilled project team as early as possible to secure buy in to the desired project outcomes, and draw on a breadth of expertise in the necessary sensemaking and de-risking process.

Off the back of their experience of delivering this project, and as part of on-going internal collaboration and governance improvements, BCC set up an internal 'design panel' group. This is a cross-skilled team, including mechanical and electrical (M&E) and maintenance colleagues, anticipated to draw individuals into the process of implementing innovative technologies as early as possible.

“The project was handed over to the delivery team in Jan 20. It could not have been achieved without a building collaborative working relationships with all parties, particularly ZED PODS and Impact Modular. With a backdrop of Covid-19, to actually have these ZED PODS built out and tenants in place in November 20 is really a testament to all the hard work put in by everyone involved which equates to around 70-80 people.”

Bristol City Council

5.0 INSTALLATION & HANDOVER

“We have photos of every single stage of the building and everything is correct and been inspected before they leave the factory.”

ZED PODS

“It was a very clean site throughout, with very little spoil arising from the screw piled foundations.”

ZED PODS

“We’d allowed for weather and contingency, but it just went together so much quicker- because it’s precision engineering, everything is designed and modelled in Building Information Modelling (BIM) and fabricated to such tight tolerances, you don’t get a lot of the problems you get on standard sites.”

ZED PODS

INSTALLATION

ZED PODS dwellings were fabricated by Impact Modular (who bought out Lesko Modular in April 2020), in their factory in Peterborough. Work on the modules began in mid-June 2019. The factory was negatively impacted by the outbreak of coronavirus (Covid-19), which affected the supply chain, but was able to continue making the ZED PODS under new COVID guidelines. The modules were all built and fitted out with bathrooms and kitchens in just eight weeks and driven down the motorway and craned onto the site mid-August.

As with any ‘first’ lessons can be learnt from the challenges and the successes. The success of the installation of the ZED PODS dwellings was a learning point in itself for ZED PODS with planned time scales being found to be overly generous in some cases and overly optimistic in others. For example, the foundations were given 2 weeks to go in and took 4 days. Steel works were given 3 weeks to go up and took 5 days.



Installation of the ZED PODS, photo courtesy of @JonCraig_Photos

The nine ground-floor modules were craned on the steel frame in a single day, with the second storey modules all added on top the following day. On a third day (after a weekend) the four larger 2-bed unit modules were installed, to complete the terrace. These larger modules were within transportable width, but once off the motorway had a police escort to the site.

The site on which the ZED PODS are placed has a mature treeline on either side, making it essential that the dwellings were placed down the centre of the site to maintain the distance from the trees and protect them during construction. The treelines emphasised the need for the meticulous forward planning for the ZED PODS delivery and construction, also taking into account the loading and offloading of the ZED PODS and where the cranes entered.

The planning of the order of the homes delivery onto site was vital to a smooth construction process

CHALLENGE:

The site only had one access point, and each dwelling was a different colour, so that homes had to be brought on site in a specific order, with the one for the far end of the site arriving first, building the site 'backwards.'

RECOMMENDATION:

Meticulous planning is necessary to ensure that volumetric modules can and do arrive in the correct order for immediate offload.

CHALLENGE:

The site was located next to a busy road and set of traffic lights, with room for only one ZED POD delivery at a time

RECOMMENDATION:

To prevent disruption on neighbouring roads, identify and arrange use of a nearby car park as a holding bay for volumetric modules being transported as part of a convoy.

“There’s a lot of coordination that has to go into getting the homes on site, to make sure that the dance is correct and synchronized!”

ZED PODS



@CllrAsherCraig
6 October 2020

A welcome addition to St George. New sustainable council homes - a welcome sight. In spite of the challenges we face as a city we're still delivering as we negotiate COVID.



@MarvinJRees
4 Sept 2020

Thanks @zedpods and all for the hard work. Proud to see the progress of the #zedpods and other housing projects in #Bristol

“It is our hope that these events will inspire other such projects across Bristol and the UK as it can now be seen that it can be done.”
Bristol Housing Festival

HANDOVER

The inspiring and innovative nature of Hope Rise has meant that it has drawn a lot of attention from a wide variety of people who are interested in both the technical and human elements of the project.

Tours of the Hope Rise dwellings are being organised for early November, prior to residents moving in so that they can be viewed in situ by some of those who have worked extremely hard in making this project concept a reality. When delivering innovative schemes like this one, time has to be allocated to enable tours before residents move in, to satisfy people’s curiosity without detrimentally impacting the experience of residents in the initial few weeks of living in their new homes.

An official opening with press present (or watching via livestream) is also being planned for mid-November, when it is hoped that the residents can receive an official welcome by dignitaries and leaders from all four of the core project-partners.



Project team site visit, photo courtesy of @JonCraig_Photos



@CllrAsherCraig
7 Sept 2020

I was delighted to attend a socially distanced event to make the installation of the new innovative sustainable @zedpods Council Housing Scheme at Chalks Road Carpark in my ward St George West. Tenant will be moving in by end of October supported by live-in Community Builders.

An additional aspect of the handover in this instance was the installation of a mural on the end gable wall. As well as mitigating against the risk of vandalism a piece of street art, spray painted by a respected and local Bristol artist, was anticipated to:

- Develop the sense of local ownership and pride in new Chalks Rd ZED POD development, both for the new residents and local community in St. George.
- To make these new eleven homes, built in a factory in Peterborough, feel a part of Bristol.
- To demonstrate the value of public-art in embedding offsite-manufactured housing in existing local communities.
- Give local residents the opportunity to say something meaningful in their community.

[Upfest](#), Europe's largest Street Art and Graffiti festival, were commissioned to help the project team select an artist, who would not only produce a quality piece of art but would also have the skills to engage the community in the design consultation and development process. Following a mini-competition artist Kin Dose ([@Kin1Official](#)) was selected to undertake the piece.

A community consultation revealed that local residents who responded to a survey wanted a piece of artwork that would make the new residents and neighbours feel peaceful, safe, positive, proud, hopeful, welcomed and uplifted. They suggested they'd like to see imagery that included wildlife, people, spring, sunshine, spring flowers, sky, birds, light, trees, community and nature overcoming industry (to capture the mining history of the St George area).

The planned design workshop with survey respondents had to be cancelled at the last minute due to new Covid-19 restrictions, but instead all the respondents who wanted to stay involved, were sent a mood board telling the story of the design development to date and were invited to provide further ideas and feedback. The final design was approved by BCC and ZED PODS prior to installation.

CHALLENGE:

The use of a cherry picker to access the gable elevation over the external stairs, necessitated a second operative to work with the graffiti artist increasing the installation costs.

"It is proposed that the artwork should reflect the name of the new development 'HOPE RISE' as these homes have been designed and are being delivered to give the new residents a sense of 'hope'."

Artwork Brief, Bristol Housing Festival

[Learn more about the artwork from the artist here](#)



Mural installation courtesy of ZED PODS

6.0 HOUSING OPTIONS & NOMINATIONS

“We talked with the nominations team about what it would look like to have people live on site who would come with a different responsibility to say ‘we’re here to help foster community and we’re here to mentor’ if that’s what people want- very light touch.”
Bristol Housing Festival

“My personal feeling is that there’s a huge gap between people leaving home and being on their own...that gap needs to be bridged a little bit.”

**Bristol City Council
Housing Options Team**

“You can’t engineer community just through physical design.”

YMCA

The way in which these homes were allocated to tenants was fundamental to the vision for this new development, and for Bristol City Council as innovative an approach as the modular construction itself.

OPTIONS AND NOMINATIONS

This is the first time BCC has partnered with an external organisation to reimagine, and shape the allocations process itself. To draw on YMCA Bristol’s experience of ‘curating’ and supporting a mixed community of young people, the YMCA were brought on board as a key partner - to shape the allocations and facilitate the community development within the ZED POD development over its lifetime.

‘It is anticipated that all of the homes will be made available for young people nominated by the YMCA, working people on incomes below local average earnings, and young people who are making their first steps into independent living’ (BCC Cabinet Paper, May 2019). BCC’s lettings team recognised the need for housing, which could help plug the gap between supported and independent housing, in which single people could learn to live independently but with the support of a community of neighbours.

The ambition was for the one-bedroom homes to be allocated to mix of young people (18-35), either moving on from the ‘Bristol Wing’ or from Bristol City Council’s Home Choice register. For this model to be sustainable the homes needed to be affordable to young people, whether they were earning or claiming benefits, such as the Local Housing Allowance (LHA). The LHA rates were increased in April 2020 to reflect the government’s increased support following the outbreak of Coronavirus (Covid-19). The current rates are [here](#). Due to temporary closure of the Wing backpackers’ hostel in 2020 (due to Covid-19), the young people nominated by the YMCA came through the Youth Housing Pathway.

This was the first time that Council housing in Bristol had been allocated to 'Community Builders' (individuals recruited by the YMCA to a voluntary community-cohesion role) or allocated to individuals committed to the **values of the development**, which are outlined below (version May 2019):

"We are together":

- *We take an active interest in the people living alongside us.*
- *We take part in regular community activities including meetings and social activities.*
- *We offer support to our neighbours when it is needed.*
- *We accept support from our neighbours when we need it.*

"We have a purpose":

- *We take opportunities for meaningful work, training and volunteering.*
- *We look for ways to benefit the community around Chalks Rd.*
- *We take our responsibility to the planet seriously by reducing any negative impact we have.*

All residents will need to be committed to the values of Hope Rise. The development will enable young people to afford a home and live as part of a nurturing mixed community. It will be self-managing, with support from the YMCA.

YMCA Bristol's ongoing role in the place-making and place-keeping of this development will include:

- Manage referrals as per the Local Letting Policy;
- Provide training and support to the community leaders/responsible neighbours;
- Support young people living in the ZED PODS; and
- Work with community leaders/responsible neighbours to establish regular opportunities for community activities including meetings, social events and volunteering.

The YMCA will be paid a small annual fee for providing support and community building activities.



Interior view, courtesy of ZED PODS

"People were signing up to be part of something...you still have your own home and front door, but we expect you to be part of the community. It's the first time we've done it like this."

***Bristol City Council
Housing Options Team***

"I'd like to go down for some of their cooking nights!"

***Bristol City Council
Housing Options Team***

7.0 RESIDENT EXPERIENCE & EVALUATION

“Because this was unique scheme, the Planning Committee asked for a report to be submitted after 12 months of occupation, as to how they overall management of the site, use of the car park and residential, how are the tenants coping....we really welcomed that planning condition as we need to learn from experiments like this.”

Turley

[Learn more about Commonwealth Housing](#)

“It’s zero carbon housing in a social housing setting, which is what all the big builders say you can’t do and we’ve proved you can do it.”

ZED PODS

This project was conceived with the experience of young people at the centre. The zero-carbon design of the ZED PODS, the selection of the site in St George, the affordability mix and the wrap around support of the YMCA, have all been envisioned and ensured through the development process as integral aspects of the scheme.

The success of this development in forming a healthy, sustainable, self-managing community in which individual young people thrive, can only be evaluated through the experience of the residents.

RESIDENT EXPERIENCE

In recognition of the unique nature of this development, and the likely material needs of the young people these modular starter homes were designed for, Bristol City Council, as the Landlord, opted to part-furnish the one-bedroom ZED PODS. The furniture was in addition to the in-built kitchen, ensuite bathroom and built in wardrobe, which was integral to the ZED POD and completed in the factory before delivery to the site.

POST OCCUPANCY EVALUATION

Hope Rise is a development the Bristol Hosing Festival has championed in Bristol, in the expectation that this housing model (both the ZED POD technology and the involvement of the YMCA in creating a supportive community), has the potential to be replicated elsewhere in the city and beyond.

To be confident in replicating this development, and in learning how future homes could be improved, it is essential that we understand what these homes and communities are like to live in, and how they make people feel.

Being the first housing development of its kind, in a number of ways, there was significant interest in evaluating the successes, and lessons that can be learnt, from this prototype. As a result, this project attracted grant funding enabling a multifaced evaluation of the development. Care has to be, and was taken, to balance the learning, which is of huge value to the project stakeholders and society more generally, with the lived-experience of the residents, which would be implicated by the research process itself. Mindful of this, the opportunity to engage with the post-occupancy

evaluation of this innovative development was built into the advertising process, so that the applicants were familiar with the aims and full scope of the 'ask' of residents prior to applying.

CHALLENGE:

The Post Occupancy Evaluation relied on the residents owning either a personal computer, laptop or smart phone giving them access to the internet. Before the tenants were confirmed it was not possible to assess what devices they might or might not own, or what platforms they were most comfortable communicating with the researchers on. This was particularly acute as a result of coronavirus restrictions, which limited the opportunity for face-to-face meetings and prevented an introductory workshop with participants.

“Everyone wants to see a proof of concept. We’ve gone through all the regulatory hurdles. We’ve gone above and beyond what we needed to do.”

ZED PODS

All the residents will get a detailed and personal introduction to the purpose and nature of the evaluation at the beginning of their tenancies, being invited to participate individually and collectively as part of the new Hope Rise community. Importantly, the residents will be able to withdraw from the evaluation at any point. It is anticipated that the community-builders, who will also be participants of the evaluation, will play a beneficial role in facilitating the research, acting as intermediaries between the research team and the community as a whole.

Grant funding for the evaluation was awarded by Commonweal Housing, an action learning charity that exists *to investigate, test and share housing solutions to social injustice*. This funding acted to attract and leverage further funding to broaden the scope of the evaluation. Specifically, this initial funding unlocked Grant4Growth funding from UWE, enabling the research proposal to be expanded to include an academic assessment of resident-comfort. Substantial further investment from ZED PODS (partially funded as part of a larger Innovate UK research project), enabled sensors to be installed in five of the dwellings, enabling perceived comfort to be correlated against quantitative physical data. ZED PODS also purchased sensors to measure Indoor Air Quality.



*Interior view,
courtesy of
ZED PODS*

The POE comprise six streams of enquiry:

[Learn more about the
Centre for Thriving
Places](#)

[Learn more about the
Happiness Pulse](#)

[Learn more about
Arbnwell](#)



- i) An assessment of the impact of these homes on the general happiness and wellbeing of the occupants. This is being evaluated using the Happiness Pulse survey developed by the Centre for Thriving Places.
- ii) A review of the energy generation by the PV installation in comparison to the collective energy use of the residents over the course of a year.
- iii) Monitoring of five of the eleven homes, to continuously measure and report temperature, light level, humidity and air quality.
- iv) Real-time feedback on occupant comfort using the [Arbnwell platform](#), which residents can use report whenever they are feeling uncomfortable.
- v) One-to-one photo-led interviews with residents about the lived-experience of their MMC homes, focussing on individual a) perceptions, b) interaction and c) personalisation. These interviews will be conducted approximately six months apart to capture the change in season, and individual experience of settling in.
- vi) Capture and evaluation of project data to include rental income, arrears, support given by project partners and the engagement of residents in education, employment, training and in community activities.

In addition, a report will be produced to satisfy the Planning Condition focusing on the impact of the development on the carpark, park and local area. Collectively these research streams are expected to give the client, design team and broader industry, a detailed and academically validated, evidence-base, to enable continuous improvement to inform future replication.

8.0 REPLICABILITY & AWARDS

REPLICABILITY

Only time and the post occupancy evaluation will help the project stakeholders draw evidenced-based conclusions about the success of this scheme. For ZED PODS the delivery of this project has been the proof of concept that other were waiting to see, and they have seen a number of enquiries from other local authorities and future clients.

ZED PODS have now signed a contract with Bromley to do a very similar scheme but 25 units. They are also working with one of the Kent boroughs on another scheme over a carpark.

AWARDS

Prior to completion on site the Hope Rise scheme had won or been shortlisted for a host of industry awards:

- **Insider South West Residential Property Awards 2020** - Small Residential Development of the Year (less than 100 units), **WINNER**.
- **Inside Housing Development Awards 2020** - Modular Housing, **WINNER** (in partnership with Bristol City Council and the Bristol Housing Festival)
- **Bristol Property Awards 2020** - Civic Development, **FINALIST**.
- **Offsite Awards 2020** - Social Housing Project of the Year, **FINALIST** & Best Use of Timber Technology, **FINALIST**.
- **Building Awards 2020** - Small Project of the Year, **FINALIST**.
- **Structural Timber Awards 2020** - Social Housing Project of the Year, **FINALIST**.

"It's a learning journey for everyone when you do things differently. Now we have delivered a scheme and gone through that approval process once, everything should be that much smoother and easier going forwards."

ZED PODS

"I'd love to do another ZED PODS one again!"

*Bristol City Council
Development
Management*

"Everyone wants to see a proof of concept...we've shown that the concept works."

ZED PODS



CONTACT INFORMATION

Bristol Housing Festival
hello@bristolhousingfestival.org.uk

"I was immensely proud to be working on a scheme like this that resonates with so many of my values...not only from a professional perspective but also as a resident...I was excited to be working on the project but also really happy with the way my local authority is dealing with affordable housing."

Turley

PROJECT PARTNERS





The Bristol Housing Festival supports the Sustainable Development Goals