

What are the barriers

faced when
attempting to
implement

MODULAR

designed
accommodation
for vulnerable
people?

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commonweal  **housing**
Housing Solutions to Social Injustice

Introduction //

This research is being conducted on behalf of Commonwealth Housing to understand the barriers faced when trying to implement modular designed accommodation for vulnerable people.

What do we mean by modular?

Modular design is a design approach that sub-divides construction elements into smaller parts called modules. These modules can be constructed off site in factory conditions and then quickly assembled on site.

What are the main benefits of modular design?

- Quality control through the use of factory off-site manufacturing.
- Quicker than traditional construction.
- Cost effective due to the shortened construction period and associated labour savings.
- Unlocks sites that would otherwise not be built upon as you don't need large on-site compounds.
- Can be constructed in built-up areas faster, quieter and easier as everything has already been manufactured so less work is needed on site.
- Using modular allows the unlocking of sites earmarked for development through 'meanwhile use'.

Meanwhile use and modular design

The modular schemes discussed and shown in this document are all occupying their sites as a 'meanwhile use'. Meanwhile use covers a range of temporary uses on land and property awaiting longer-term development. Meanwhile use, therefore, makes use of sites that would otherwise be sat vacant and as a result generate extra revenue for the landowner. The meanwhile use lease period is typically between 5-10 years.

It's within this space of 'meanwhile use' that modular designed accommodation for vulnerable people so frequently occurs. If a

site is to accommodate a meanwhile use, the building accommodating that use needs to be quick to construct and remove due to the short lease of the land. Modular constructed architecture, due to the fact it is quick to construct and also quick to disassemble, makes for an effective solution to unlocking these sites. In theory, once the lease is up, a modular scheme can be de-assembled, put on the back of a lorry and assembled on another site. The architecture discussed in this research is engaged in a process of unlocking underused sites for the good of those most vulnerable in society.

Who do we mean by 'vulnerable' people ?

Examples include:

- Homeless
- People with mental health issues
- Physically disabled
- Elderly
- Those facing unstable employment
- People on low income levels
- People who find it hard to secure mainstream housing options
- Young adult carers
- Individuals with no recourse to public funds
- Asylum seekers

Why are Commonweal Housing interested in modular designed accommodation for vulnerable people?

Commonweal's interest in the scope and potential of modular and factory built housing grew from the range of shared housing projects supported over recent years. These projects explore new solutions to a range of different injustice areas such as offering affordable and accessible accommodation to those moving on from street homelessness and hostels; the housing needs of young adult carers; individuals with no recourse to public funds and those battling the hostile environment of the asylum system. It was clear that the successful reuse of existing three and four bedroom homes was great but at a time when there was an overall shortage of housing we were effectively 'robbing Peter to pay Paul!'. This was a view echoed by Andy Redfearn who was developing his LivShare concept – recognising the need to increase the supply of purpose built forms of new shared housing. Commonweal provided some early design funding to enable the LivShare idea to be developed further.

Commonweal's interest is not in modular housing innovation for innovation's sake nor is it just about seeing it as a solution to the housing crisis. As a charity Commonweal's focus is on 'housing solutions to social injustice': access to the right housing at the right point in people's lives can enable them to better tackle other issues in their lives, be that a journey away from homelessness, substance misuse, an abusive or violent partner, the clutches of criminal gangs and traffickers or aspirational move on in to employment or life as a young carer. Commonweal recognises the potential for modular and factory-built housing to provide potentially more bespoke, affordable, timely and flexible new forms of housing that can best meet the needs of different cohorts. Such new homes might offer the vehicle and the 'housing solution' that will enable their expert delivery partners to help their diverse client groups to overcome their respective manifestations of 'social injustice'.

Meet the professionals //

This map shows the range of professional organisations we have interviewed as part of this research. Through these meetings and conversations, we have compiled a list of key challenges faced while developing modular designed accommodation for vulnerable people have been pulled together.



Andrew Bailie
Partnerships -
Social Bite



Bill Jennings
Managing
Director - JDA
Architects

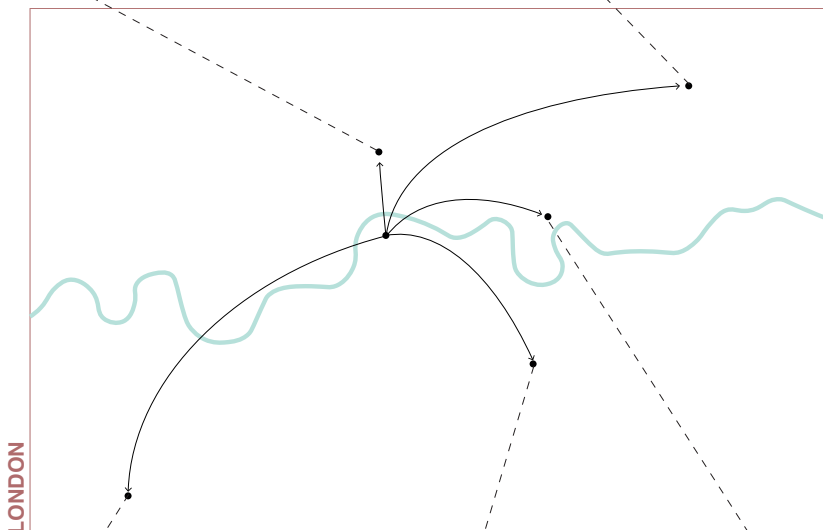




Jeff Endean
Director at Cast - A Real Estate & Construction Consultancy



John Clifton
Salvation Army, Captain, Ilford



LONDON



Andy Redfearn
Redfearn Consultancy Ltd



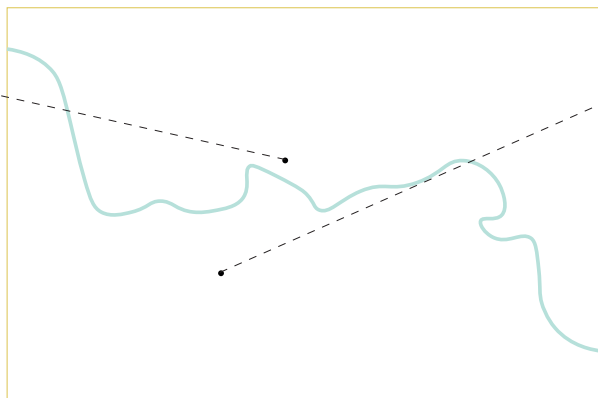
Osama Shoush
Lewisham Council, Housing Delivery Manager



Mark Baigant
Director of Housing and Regeneration, Tower Hamlets



Jasper Thompson
Founder of Help Bristol's homeless



BRISTOL



Jamie Gill
Partnerships director- 1625



Andrew Baillie
Partnerships -
Social Bite

Andrew was involved in Social Bite's Homeless village in Edinburgh, a highly supported community for up to 20 people affected by homelessness. The scheme is occupying the site as a meanwhile use.



Andy Redfearn
Redfearn
Consultancy Ltd

Andy has worked in the supported housing sector for 30 years and now splits his time between being a building consultant and a non-executive Director of North London YMCA. During his time with the YMCA Andy worked on the modular scheme Y-cube in Mitcham (more information on page 11)



Bill Jennings
Managing
Director - JDA
Architects

Bill works with a number of charities at JDA architects, who have been involved in a number of modular designed homeless schemes in London.



Jasper Thompson
Founder of
Help Bristol's
Homeless

Jasper is the founder of Help Bristol's Homeless and is currently involved with expanding and managing their homeless shipping container village in Bristol.



Jamie Gill
Partnerships
Director -
1625

Jamie Gill is a partnership director of the charity 1625. Jamie has been largely involved in pushing forward LaunchPad, a modular housing scheme in Bristol that cross-subsidises homeless accommodation with students accommodation.



Jeff Endean
Director at
Cast - A Real
Estate &
Construction
Consultancy

Jeff Endean worked with Lewisham council on the 24 unit Ladywell/PLACE (more information on page 11). Jeff is now a director at Cast - A Real Estate and Construction Consultancy.



John Clifton
Salvation
Army, Captain,
Ilford

John Clifton has played a key role in pushing forward a 42 unit scheme for the homeless in Ilford. The scheme is being developed in partnership with Redbridge Council. 27 of the units will be made available to those eligible for housing benefit while 15 will be made available of those with no recourse to public funds.



Mark Baigant
Director of
Housing and
Regeneration,
Tower Hamlets

Mark is a director at PLACE (Pan London Accommodation Collaborative Enterprise) a not-for profit organisation set up to tackle homelessness in London. PLACE is aiming to have a resource of 200 modular accommodation units by 2021 to distribute to councils across London as and when required. The modular units are intended to be assembled on sites as a meanwhile use.



**Rehan
Khodabuccu**
ZEDpod's
Operational
Director

Rehan is the operational director of Zedpods, a modular designed accommodation that decouples housing provision from land prices by utilising air rights over car parks (more information on page 10).



**Osama
Shoush**
Lewisham
Council,
Housing
Delivery
Manager

Osama works for Lewisham Council as the housing delivery manager and was involved in the delivery on the 24 unit Ladywell/PLACE scheme in Lewisham (more info on page 11).

Case Studies //

Over the following pages are a few examples of the projects talked about during interviews with professionals currently working on modular schemes to house vulnerable people.

Scheme: ZEDPods

Interviewee involved: Rehan Khodabuccus

Client: n/a

Architect: ZEDfactory

Information:

ZEDPods decouple housing provision from land prices by utilising air rights above car parks. Raised on stilts, the land below can carry on being used for its original purpose while housing is provided above - consequently maximising underused sites.

It is intended that ZEDPods are deployable for a range of clients including Health Authorities, Housing Associations, Private Developers and Local Authorities.



Scheme: Malgo Road

Interviewee involved: Jasper Thompson

Client: Help Bristol's Homeless

Architect: n/a

Information: A series of 15 shipping containers converted into homeless accommodation, each unit with a lounge, Kitchen, bathroom and bedroom. The homeless themselves are involved in the maintenance and retrofit of the containers, giving opportunity to develop skills and a sense of ownership over the project.



Scheme: PLACE/Ladywell

Interviewee involved: Jeff Endean/Osama Shoush

Client: Lewisham Council

Architect: Roger Stirk Harbour + Partners

Information: Development providing 24 homes for local homeless people with four ground-floor community/retail units. The scheme is currently occupying the site as a meanwhile use and is due to be relocated in the coming years. The modules have a guarantee of 60 years and 5 moves.



Scheme: Y:Cube

Interviewee involved: Andy Redfearn

Client: YMCA

Architect: Roger Stirk Harbour + Partners

Information: Self contained and affordable starter accommodation for young people unable rent or buy in the private housing sector. The units are 26m² for single occupancy. Each unit is manufactured off site with services already integrated.



BARRIERS FACED //

Over the following pages are a list of the 8 main barriers faced when trying to develop modular designed accommodation for vulnerable people. These have been based on the interviews conducted as part of this

research.

The name of the interviewee is listed, then below are the points discussed in their interview.

BARRIER 1

LOCAL COMMUNITY

Bill Jennings: JDA Architects, Managing Director

- Bill spoke of various examples of local opposition faced when developing modular schemes for homeless people, especially when trying to develop them in residential areas. One of their 3 sites in Ilford had to be relocated due to resident complaints.

John Clifton: Salvation Army, Captain, Ilford

- John believes one of the key factors contributing to the successful initiation of Project Malachi was the inclusion of the local community from the very beginning.
- Through their crowdfunding campaign 'Redbridge Together' a sense of community cohesion was created surrounding the project.

Andy Redfearn: Andy Redfearn Consultancy

- Andy was impressed by the level of support surrounding modular schemes for vulnerable people in Bristol. Andy talked about the importance of this support for the success and implementation of these schemes. Andy went to a public consultation in Bristol regarding the ZEDpod scheme and was expecting the normal opposition that is met in London, but people were only positive.
- It seems apparent that there is an open-mindedness for schemes housing vulnerable people within the communities of Bristol, which is certainly a large contributing factor for the range of innovations that are currently being implemented there.

Jeff Endean: Director at Cast - A Real Estate & Construction Consultancy

- The Ladywell scheme only had one objection at the planning stage, Jeff attributes this largely to putting in a substantial amount of effort into public consultation from an early stage. Moreover, the Ladywell scheme was on Lewisham high street, so people may have been more accepting of a bold development and design than they might have been in a more residential area.

BARRIER 2

THE MMC MARKET IS INEXPERIENCED

John Clifton: Salvation Army, Captain, Ilford

- John mentions the lack of experience in modular build within the market being a problem.

Jeff Endeane: Director at Cast - A Real Estate & Construction Consultancy

- People are not always comfortable that modular homes are going to get a mortgage, or that it is the same quality as traditionally constructed designs. Jeff suggests this is perhaps a hangover from problems of pre-fab in the post-war period.

Rehan Khodabuccus: ZEDpod's Operational Director

- There are many extra hoops to jump through-many preconceptions. Maybe a hangover from the post-war pre-fabs. Rehan states that the professional world often assume that modular designs are not up to the same standard as traditional builds. Despite this, modular builds are frequently built to a much higher standard due to benefits of off-site manufacturing.

- Modern modular construction is designed for manufacture and encompasses engineering levels precision, more so than in traditional builds.

Osama Shoush: Lewisham Council, Housing Delivery Manager

- You need to have an architect who knows the type of system that the homes are going to be constructed to from the very beginning of

the design stage. Often what happens, Osama informed me, is you design the scheme, take it to planning, then you go out to get a builder to build it. The builder/manufacturer then says you need to redesign certain parts- this all costs time and money. If the architect knows the system exactly from the start it will run much more smoothly.

- Many problems for Ladywell were only picked up on site, which would have been much quicker to resolve if they were picked up earlier in the factory. This can be solved by making sure construction team managers have a better understanding of modular design and the way modular schemes are built before starting the project.

BARRIER 3

INVESTORS SECURITY/ RISK MANAGEMENT/ FUNDING

John Clifton: Salvation Army, Captain, Ilford

- Didn't get the scheme costed until post-planning- it was much more expensive than expected.
- Normally capital has to be paid back with the revenue, but in this project this is not the case, which made things easier.
- The fact that they the scheme has 14 units available for guests who have no recourse to public funds, who will consequently generate no revenue, has meant that the revenue model has been affected which has made things more difficult.
- This funding approach for project Malachi relies heavily on donations, rather than being something sustainable. This solution is a localised solution, not a solution to the housing crisis.
- It would be hard to replicate Project Malachi scheme anywhere else

Andy Redfearn: Andy Redfearn Consultancy

- Funders initially get excited but then ask where are they going to get their security? Investors don't feel comfortable securing against the units. They are not sure it is properly built / don't see enough examples to know if they function.
- There is a need to change the mindset of the funders so that they use a funding model which is focused on the rental model rather than looking for traditional security. This should, in theory, be easy as units will fill

immediately.

- Investors do not often have another building within their assets that they can secure the loan against. Often a provider doesn't have a building, or their buildings are already secured against other loans. Many providers don't own other buildings so will never be able to offer that security.
- We need to get the development finance and then the long-term finance aligned with the housing system in a partnership
- Funders are traditional and want to secure against what they are spending.
- Need more innovative/ socially minded investors that have confidence in the rental stream.
- Aligning a business model with the housing solution
- Need examples/ finding the right funder

BARRIER 4

INSURANCE, ACCREDITATIONS AND WARRANTIES

Jeff Endean: Director at Cast - A Real Estate & Construction Consultancy

- Modular construction has an additional accreditation process through BOPAS as opposed to NHBC which a traditional house builder would use. Therefore, it has that feeling of difference which investors do not trust as much.
- The funding and accreditation issue is crucial, there is work going on to address these issues, but they remain a big barrier for many.

Rehan Khodabuccus: ZEDpod's Operational Director

- There has been reticence from the major lenders, forcing modular designed homes to jump through more hoops to prove mortgage-ability with assurance schemes such as the Bopas 'Build Offsite Property Assurance Scheme', in order to prove that we meet the same standard as buildings built on-site. In fact we exceed these standards and aim for zero defects ex-factory.
- Things are starting to change - now NHBC is coming out with its own off-site modular warranty and are now approving modular builds. As NHBC is the industry benchmark, people want to see NHBC warranties - these guys have a good reputation.
- NHBC historically have not embraced innovation, but their recent move to do so will make things easier.

BARRIER 5

UTILITY INSTALLATION (GAS, WATER, ELECTRIC)

Bill Jennings: JDA Architects, Managing Director

- Bill mentioned utility provision is a problem specific to modular construction. United utilities are very slow moving. For example, JDA Architects build 9 houses in Tameside within just a few weeks, despite this they had to sit around for about months to have gas, water and electric installed.

John Clifton: Salvation Army, Captain, Ilford

- John believes that UKPN is not keeping up and adjusting to new build technologies, the Salvation Army scheme in Ilford is purely electric to simplify the process.

Andy Redfearn: Andy Redfearn Consultancy

- Andy mentioned that service providers have not updated their services to cater for modular design, because modular design is still so small a scale within the construction industry.
- It is difficult to do anything regarding utilities until planning permission is granted - it's too risky otherwise.
- Andy discussed that a way around this is by trying to reduce reliance on utility providers. For example, using a septic tank and producing energy with solar panels.
- He believes that the PLACE scheme, led by Tower Hamlets, are falling short by only providing the accommodation. They should

tie in the ground works and utilities into the package otherwise local authorities are having to do it themselves. There should be a more efficient way of doing it.

Jeff Endean: Director at Cast - A Real Estate & Construction Consultancy

- Once the Ladywell scheme was constructed it could not be operationalised for a long while, waiting for the gas meters to be turned on. This problem came from a programme planning perspective. If you finish a project earlier than expected, the service installers are still going to come on the agreed date. You need to plan in advance to avoid these delays. A lesson was learnt through Ladywell - you need to set up and plan utility connections from day one.

Rehan Khodabuccus: ZEDpod's Operational Director

- Rehan stated that utilities have not been a difficulty – as in order to achieve a zero-carbon building there can be no gas on site. Therefore the ZEDpod schemes are only using electricity

Osama Shoush: Lewisham Council, Housing Delivery Manager

- Osama believes that UKPN and meter installers are used to working on traditional building sites that have longer construction phases. As a result of this, they are not quick and see no need to need to be quick; they

work on their own time schedule.

- Throughout the Ladywell scheme they were constantly on the phone to UKPN, it was stressful and took a lot of time.

- The Ladywell scheme was delayed by 2 months as a result of utility delays.

BARRIER 6

PLANNING

Andy Redfearn: Andy Redfearn Consultancy

- Andy stated that size standards are good because they ensure that when people are staying somewhere long-term the conditions are sufficient, but people will not be staying for a lifetime in the type of dwellings that Andy is developing. Andy is looking at transitional housing, whereas the planning policy by which these schemes are judged by is imagining a person will stay in there until they grow old. It is because of this you are having to argue with the planners on a case by case situation.
- Meanwhile, through permitted development rights, a developer can convert commercial buildings into a residential block full of tiny homes without the need for planning permission. It is these greedy developers, Andy believes, that are discrediting micro-living.
- Student housing, hostels and permitted development sit outside national size standards, so why does transitional housing not as well Andy asks? It seems apparent that the absence housing size standards specific to temporary accommodation/transitional is a big barrier when attempting to push forward a scheme that attempts to increase supply.

Jeff Edean: Director at Cast - A Real Estate & Construction Consultancy

- While working on the Ladywell scheme, Jeff didn't have a particular problem with planning. He mentioned that planning only becomes an issue when you try and make the modules smaller in size, as issue discussed with Andy Redfearn.
- Lewisham had a planner in the project team so that they knew it all lined up with planning, therefore planning was not too much of an issue. The scheme complies with the London

plan + 10%.

Rehan Khodabuccus: ZEDpod's Operational Director

- As the ZedPod schemes are often being built on difficult to build-on sites, or sites that are not in the local plan or the NPPF, then it's not a straight forward tick box exercise. As a result of this, along with cuts/overloading of planning departments, they are finding it is taking a lot longer to go through planning. Even though they are developing schemes that are 100% affordable or 100% low carbon. Because of the types of sites they are building on, the schemes are taking a lot longer to go through planning.
- They had one site stuck in planning for 15 months, this was down to the nature of the site as opposed to the project itself.
- Rehan believes planners need to adapt; we are in the midst of a housing crisis.
- It often ends up being the case that the longest part of the process is the planning process, not the actual construction of the scheme.
- They have started fully utilising the pre-app services which is costly/timely but it is the only way to get the message across to the planners at an early stage so that it doesn't become an issue further down the line.
- ZedPod schemes are all built to national space standards which does help with the planning process.

Osama Shoush: Lewisham Council, Housing Delivery Manager

- For the Ladywell scheme, Lewisham had forward thinking planners who were round the table from the beginning – this really helped.

BARRIER 7

CONSTRUCTION/ IMPLEMENTATION PROCESS

Jeff Endean: Director at Cast - A Real Estate & Construction Consultancy

- The main modules for Ladywell were built off site, but a lot of the building happened on site such as the balconies/ walkways. Mixing on-site and off-site construction methods slowed things down. On some of the newer schemes being worked on in Lewisham, everything is being built off-site.
- It is important to consider the right commercial and contractual structure for modular development because, with up to 80% of the value of a project coming from a single supplier, traditional models may not be best. Jeff said that following Ladywell, Lewisham considered this issue and looked at options including construction management, taking on much more risk, but decided to maintain the current approach but with lessons learned.
- Authorities should be learning from developers such as Swan, Urban Splash and Berkeley Group who have their own manufacturing capability. They are keeping everything within their organisation, so they are in control and know exactly what is going on.
- Key is to design with the construction process in mind from the very beginning, as opposed to designing the module first, then working out the construction process after. You lose all the efficiency in the process.
- Rather than just buying from the market, authorities should be engaged with the process all the way through.

Osama Shoush: Lewisham Council, Housing Delivery Manager

- As Jeff mentioned, Osama also believes that mixing on-site and off-site manufacturing methods on the Ladywell scheme was a mistake. Once the modules were installed, they had to wait for the time-consuming process of building the walkways and balconies on-site. Using timely on-site construction undermines the speed of off-site manufacturing. In Lewisham's newer modular schemes, they have developed the design so that everything is built off site.

BARRIER 8

DISCONNECTION IN THE MODULAR MARKET

Andy Redfearn: Andy Redfearn Consultancy

- Andy mentioned a 'group of people' developing an interesting modular scheme in Cambridge. He told them to speak to some people who have done a similar scheme before, but felt their ego was getting in the way of allowing them to do so.
- Andy feels there is a lot of innovation for the sake of innovation, and thinks we need to collaborate on a nation-wide level. People keep trying to reinvent the wheel, but Andy believes we should all take a step back and ask ourselves "What are we doing this for?"
- We need to de-mystify the process of building modular schemes, so that it is more readily accessible/available to local authorities.
- We need to share operating models, license agreements, business plans, physical plans, case studies. Perhaps an online tool can be created to do this. It would need managing- otherwise it would become stagnant after a year or two. If you were getting some traction maybe you could get some modular manufacturers to contribute money towards this platform as they might get some money back by securing construction jobs. Andy believes there is a gap to do this.

Jeff Endean: Director at Cast - A Real Estate & Construction Consultancy

- Jeff also mentioned that there are a lot of manufacturers, but many of them are new and relatively small, which brings a risk of fragmentation and not enough collaboration in the manufacturing market.

Rehan Khodabuccus: ZEDpod's Operational Director

- Rehan believes there is a tension between traditional methods of construction and modern methods of construction. There is an attitude that if a house is built on site, and there is a defect on that house, then the defect will only affect one house. There is an assumption that because each house is built individually they are also built differently. Whereas there is an assumption that if a defect is found on a module that is built offsite in a factory, there will be a default on every module.
- As modular construction is new, it's the clash of cultures between MMC and traditional construction that is causing a tension.
- The traditionalists within the existing industry are take longer to embrace different ways of doing things. E.g Financial institutions, mortgage lenders, the banks, traditional warranty providers, the surveyors and the planners.
- When you do things differently, or you're the first to do something, that is where you come across the barriers.

SUMMARY OF BARRIERS

It seems apparent that local residents represent both a barrier and opportunity to modular designed accommodation for vulnerable people. This was made explicit with the relocation of one of the JDA schemes as a result of community disapproval. In order to tackle this problem one must be obligated to involve the community from the beginning, be transparent and make the communities voices heard. As shown with Project Malachi, Ilford, involving the community throughout the whole process can lead to a scheme that the community has ownership over and therefore pride. This is factor that most of the professionals I talked to seemed to be aware of. The communities of Bristol, it seems, are generally geared toward helping vulnerable people in their city. This has inevitably contributed to the high amount of innovation in modular housing that we see today.

Largely speaking, the majority of the barriers faced when implementing the schemes mentioned in this report, can be traced down to a lack of industry experience with modular design. This starts with investors being slow to invest due to security/risk management as they do not feel comfortable securing against the units, as one might with a traditional build. It seems obvious that as more precedent for modular schemes accumulate, the less risk investors will feel and therefore the more they are likely to invest in such projects.

Risk management can also be linked to the barriers surrounding accreditations and warranties. The fact that there is a major mistrust for modular construction, as Rehan noted, is due to the fact that you have to jump through hoops with warranties such as BOPAS (Build Offsite Property Assurance Scheme) which gives the project a feeling of 'otherness' which is off-putting for risk-averse investors.

Despite this, NHBC (the UK's leading warranty and insurance provider) is now introducing its own off-site modular warranty which is going to make a big difference as NHBC have a good reputation.

Inexperience in the modular construction industry also has consequences on the provision of utilities. In almost every interview, the inefficiencies of utility installation were said to have contributed to the extension of the project timelines. United Utilities and UKPN are not keeping up and adjusting to new build technologies, which Andy believes is because the modular market still only represents such a tiny portion of the market. It seems even if you tell the utility provider that the project will be built in a given amount of time, they will treat the project like a traditional build, therefore working with longer timelines. This is a point that Osama echoed also. As a consequence, many schemes have been ready to move in, but due to the slow utility installation, these schemes have sat vacant for months. To overcome this hurdle schemes need to either attempt to be more energy independent (through the inclusion of solar panels, septic tank etc) or pressure needs to be put on utility providers to change their approach.

Moreover planning is another huge contributing factor, as Rehan stated: it often ends up being the that the longest part of the process is the planning process, not the actual construction of the scheme itself. In the midst of a housing crisis, the planning system needs to adapt to allow for modular schemes, especially for vulnerable people. Moreover, as Andy mentioned, perhaps a new set of space standards need to be developed specifically for transitional/temporary accommodation as getting past space standards is costly and time consuming.

Finally, the last most prominent point that came out of these interviews, was the disconnection in the modular market. Innovation, in Andy's opinion, is often happening for innovation's sake. Andy speculated that perhaps this boils down to too many egos wanting ownership over a project. He believes we need to collaborate on a nation-wide scale and stop trying to re-invent the wheel in isolation from one another. Jeff also mentioned how many players there are out there trying to do things with their own approach - leading to fragmentation and not a lot of collaboration. This disconnection, as Rehan suggested, also goes all the way down the construction industry: where there is a tension between traditional methods of construction and modern methods of construction.

