Re-imagining social house building in Wales

An Off-Site Manufacturing Strategy for Wales

Draft - July 2019
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1. **Executive Summary:**

**To build better social homes in Wales, more of them, and more quickly.**

This strategy is aimed at social and affordable housing providers in Wales. It sets out expectations relating to the Off-Site Manufacture (OSM) of homes, in order to provide clarity for leaders of Housing Associations, Local Government and private businesses. It aims to encourage leaders to relook at the building of new social housing, and consider complimenting traditional construction methods, with new technologies and approaches to home building.

Welsh Government is committed to investing in housing for social rent in Wales. Given the well-documented capacity constraints faced by traditional house builders, this public investment creates the potential to accelerate the opportunity to manufacture homes ‘off-site’. This is particularly true in the case of Local Authorities who may not have readily available development capacity to meet the Welsh Government’s call for more the building of more Council homes at pace.

**“From Pre-Fab to Ab Fab”**

Welsh Government will set the quality standards expected for housing that receives public subsidy, specifically with regards to space, energy efficiency and, as far as it can be defined, beauty.

Welsh Government will intervene to help and encourage the market, especially SMEs, to develop OSM solutions (supply chains, factories, skills development centres) that meet the needs of the next generation of social housing in Wales.

It is expected that materials and components used in this next generation of OSM homes will have a ‘Welsh First’ approach so that preference is shown towards materials and labour sourced locally within Wales, before seeking alternatives from the wider global economy.

Simply put, encouraging the use of OSM for the delivery of social housing will provide more homes for the residents of Wales. They can be produced in a way which is good for the economy and businesses, for communities and individuals and the public purse.

If you would like to provide feedback please email, housingqualitystandards@gov.wales no later than 30 September 2019.
2. **Introduction**

**What problem are we trying to solve?**

2.1 Traditional house building methods will not significantly increase the supply of affordable and social homes in Wales. The challenge is therefore how to build better quality homes, more quickly and cost effectively, whilst designing them for the benefit of tenants of today and tomorrow.

2.2 More homes of all tenures are required in Wales. Government has the most control over social housing and aims to create the climate to usher in a new golden age of social house building in Wales. Building new social homes at scale and pace, means social housing programmes becomes a vehicle to support broader Welsh Government objectives including decarbonisation, supporting the foundational economy, developing Welsh resources such as steel and timber and boosting local supply chains and labour pools. It is intended, where social housing blazes a trail over time the private sector will be expected to follow.

2.3 Welsh Government is aware that a different approach is required to new house building. The Innovative Housing Programme (IHP) has been funding new housing schemes utilising modern methods of construction (MMC) including OSM. This programme has encouraged an open book approach to developments with a view to sharing information within the sector to increase confidence and transparency in some new technologies as well as some existing methods of construction.

2.4 Many organisations are already exploring the opportunities presented by MMC and OSM, and this document sets out Ministerial expectations to help frame the decision making of housing providers right now. We also acknowledge the actions set out to increase social housing supply through MMC will take time to put in place, but ultimately will support a flourishing industry in Wales in the following few years.

**This strategy**

2.5 OSM for housebuilding has gained recent attention as both a policy and product because it promises to deliver housing quicker and uses a different supply chain to that of traditional housing construction. OSM is not a new technology and has been used in the UK to address demand challenges for housing in the past. Following, World War II, prefabricated (‘pre-fab’) housing was endorsed and used by government to provide housing for those who served or lost their homes during the war.
2.6 However, modern OSM is considered to be far-removed from its ‘pre-fab’ past. The development of the technology has addressed quality, sustainability and durability issues associated with pre-fabricated units. Today, the majority of OSM manufacturers produce products which mirror the look and feel of traditionally-constructed housing and their lifespans. OSM is now intrinsically linked to quality housing for example Passivhaus and Huf House and is often perceived as upmarket, delivering grand designs. Let’s be clear, Wales is looking for high quality housing solutions.

2.7 This ‘new age’ of OSM technology is still being refined and improved, and in many ways is relatively untested by consumers. The building landscape is awash with reports into the opportunity that current modern methods of construction potentially presents, extolling the virtues of off-site and other innovative ways of producing homes. Housing Associations & Local Authorities across Wales have been keen to explore the potential OSM presents for building social housing. OSM can provide part of the solution to the problems currently blocking a significant increase in housing supply using traditional construction techniques, namely:

- a construction skills crisis
- poor quality new-build homes regardless of tenure
- a lack of control in the system
- an historical aversion to development pipeline collaboration.

In Wales, the traditional approach to housebuilding is particularly challenging with an acute shortage of contractors and increasing difficulty in ensuring high quality buildings.

**Many factors have inhibited building at scale using OSM**

2.8 Current custom and practice in the sector means there is a lack of control in the development process which creates an obsession with upfront costs. This leads to significantly higher asset management and repairs costs in the best case scenario and in the worst case scenario, can put resident safety at risk.

2.9 Procurement models in construction typically drive low cost, rather than seeking high value/whole life cost approaches. This has made it difficult for OSM to compete like-for-like against well-established traditional house building approaches.

2.10 Design and Build contracts used across the sector, tend to be structured so that subcontracting inevitably occurs for a large proportion of a typical build project. This leaves the supply chain open to disruption and in turn leads to
questionable quality construction that only comes to light after the building’s warranty period has expired.

2.11 The consequences of this approach has meant a significant growth in the amount spent maintaining the existing homes, compared to the amount spent on building new houses. Off-site construction has the ability to mitigate for this lack of control through a more structured supply chain and less exposure to the fluctuations in the traditional skills workforce.

“**You wouldn’t try and precision engineer a car in a field, so why would you dream of thinking we should build quality homes there?**”

Off-Site Manufacturer based in Wales

2.12 SME financial capacity presents as a barrier to mass production of OSM products. With a different cash-flow profile to traditional developments, OSM producers shoulder a higher risk burden than traditional developers.

2.13 A perceived lack of confidence from consumers including historical negative perceptions of the products (which is largely untested).
What’s different this time?

2.14 Off-site manufacture for construction provides clear and tangible benefits which make a compelling case for its widespread use. These include

- Better quality buildings and infrastructure
- Fewer labourers and increased productivity
- Creating more regional jobs away from large conurbations
- Improved health and safety for workers
- Offering building safety advantages—making it easier to ensure buildings meet quality assurance standards
- Improved sustainability of buildings and infrastructure
- Reduced disruption to the local community during construction
- Protection from adverse weather and more predictable labour costs.

2.15 OSM approaches also have a key role in fuel poverty elimination, healthier homes, energy innovation for decarbonisation. OSM as a modern method of construction will form a greater share of the building of new affordable homes in Wales, forming a blended stock portfolio for securitisation purposes.
3. **The will to invest and deliver more social housing**

3.1 Welsh Government is pursuing policies to accelerate the pace of social housing delivery to match growing demand. This is particularly relevant to the Welsh Government’s commitment to Council house building at pace, as many Local Authorities may not currently have readily available capacity to make the step change in supply that is required. The Welsh Government has committed £1.7 billion to housing to help deliver 20,000 new affordable homes during the current 2016-2021 term. Community Housing Cymru, the umbrella body for housing associations in Wales, launched its twenty-year ‘Housing Horizons’ vision for Welsh housing associations in November 2017 - the vision’s commitments include a pledge to build 75,000 new homes by 2036.

3.2 In 2018, Welsh Government instigated a comprehensive Affordable Housing Supply Review. The remit of the review was to respond to a range of housing needs and to seek ways in which the scale and pace of affordable housing delivery in Wales could be increased. The review has set out a large number of recommendations with wide ranging implications for housing in Wales.

3.3 One of the recommendations that came out of the review is for the Welsh Government to produce a strategy focussing on how to scale up and normalise modern methods of construction including off-site manufacturing (OSM), as well as looking at opportunities for delivering zero carbon homes.

3.4 This strategy has been written in the context of the Welsh Government’s decarbonisation strategy and will embrace the principles outlined below. The Environment (Wales) Act 2016 placed a duty on the Welsh Government to reduce carbon emissions in Wales by 80% (over 1990 levels) by 2050. By the end of 2018, the Welsh Government will be laying regulations which set out our targets for emission reductions in Wales to 2050. We will also publish a plan in summer 2019, which will outline the policies and proposals for meeting our first carbon budget and include housing. In addition to the obvious environmental and health benefits which will be realised, these targets will allow us to guide delivery, better evaluate progress and provide certainty and clarity for investment and business.

3.5 The Decarbonisation of Homes in Wales Group has asked Welsh Government officials to develop a long term programme of action to deliver on its commitment to reduce the carbon emissions of homes in Wales. This will be needed by the end of 2019 to inform Welsh Government policy, programmes and investment in the domestic building stock.
3.6 New homes will need to be future proofed for this agenda to avoid creating problems to pay for later, but the main focus of the new programme of action will be retrofitting the existing housing stock of 1.4m homes across all tenures.
4 Definitions of OSM

4.1 Off-site manufacture for housebuilding is a type of Modern Method of Construction. The term is generally used to describe a construction technology that utilises some fabrication of elements prior to installation on the site of intended use.

4.2 The key difference between OSM and traditional on-site construction is around the amount of fabrication done off-site, usually within a factory environment.

4.3 However, determining how much fabrication must be done off-site to constitute a building as OSM is challenging, namely because all traditional construction techniques also utilise some manufactured elements. Hence, OSM is not a fixed point – rather it is an aspiration towards total unit manufacture, or the fabrication of all elements of a building off-site, as illustrated by the image above.

4.4 Regardless of where it is on the spectrum, the primary aim is to increase residential pre-manufactured value (PMV) across a spectrum of different innovative approaches that improve productivity, quality and certainty.

4.5 One end of the scale assumes all elements of a building are constructed on-site. The other end of the scale assumes all elements of a building are constructed off-site. In practice, traditional on-site construction will likely fall somewhere in the left centre, since some elements used to construct the building will be fabricated off-site (such as bricks and blocks) and OSM will likely fall somewhere right of centre, since most elements to construct the building will have been fabricated off-site (such as wall panels or 3-D room modules).
4.6 Another way to define OSM is to list it as a set of technologies. The following technologies are generally accepted as OSM¹:

- Volumetric units: segments of buildings manufactured in 3-D and fitted together on-site
- Panelised units: wall and ceiling panels are manufactured and assembled on-site to create 3-D structures
- Sub-assemblies: 3-D elements of buildings, such as kitchen and bathroom pods, are manufactured off-site and fitted on-site
- Building components: elements of buildings such as columns, floor slabs and beams.

¹ House of Lords Science & Technology Committee, “Off-site Manufacture for Change”
5 **UK and Welsh position**

**The UK Position**

5.1 The UK Government recognises that the construction sector as it is currently constituted cannot efficiently meet the need for housing delivery. In July 2018 the select committee report *Off-site manufacture for construction: Building for Change* outlines how off-site manufacturing could help the sector to meet our housing needs. The report details how off-site manufacturing provides clear and tangible benefits which makes a compelling case for its widespread use.

5.2 The UK Government as well as the Welsh Government recognise that the take up of off-site manufacture is varied and in certain parts of the sector has been limited. Action is required by not just the sector but by government if more OSM homes are to be built as part of social housing development programmes.

5.3 The publication of the UK Government’s [Construction Sector Deal](#) is an important step forward for off-site manufacture and the wider construction sector. As well as its announcement of a ‘presumption in favour’ of off-site manufacture, the UK Government is showing a strong commitment to investing in off-site manufacture for construction.

Simply put, encouraging the use of OSM for the delivery of social housing will provide more homes for the residents of Wales. They can be produced in a way which is good for the economy and businesses, for communities and individuals and the public purse.

**The Welsh position**

**OUR VISION** is to reimagine how new social homes are built in Wales

**OUR SOLUTION** is to build better social homes in Wales, more of them, and more quickly.
6. **Key Objectives**

The aim of this strategy is to focus resources to deliver more social homes using OSM and in doing so help develop the supply chain in Wales.

Welsh Ministers will support OSM in Wales by:

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<th>6.1 Standardising rings of assurance, warranties and accreditation to support lender and third party confidence in OSM</th>
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<td>The provision of warranties and guarantees for homes is key in gaining confidence in OSM homes. UK-wide assurances and definitions will be adopted in full. This will ensure uniformity of quality marques for lenders, valuers, and insurers in order to support investment into homes built using OSM in Wales. Over time, these warranties will become standardised across the UK and it will be the responsibility of organisations to apply for and gain appropriate accreditation their products. The will be a unified technical assessment platform.</td>
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<th>6.2 Setting achievable building performance requirements for all social new build homes in Wales</th>
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<td>Whilst the benefits of OSM are widely acknowledged, at this time it is an emerging, immature market in Wales. There are a handful of small Welsh based providers, which can provide OSM homes and form a growing proportion of housing development pipelines. Nonetheless, the majority of homes at this juncture are still likely to be built using traditional construction methods.</td>
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In order to fully realise the opportunities presented by OSM, and address some of the issues identified with traditional construction methods, Welsh Government favours a ‘building performance’ approach to drive up the quality and number of social and affordable homes in Wales. |

It is important to set out the Welsh Ministers’ expectation for housebuilding because it is much easier to design in these factors at the start of a process, than at the end. With a number of SMEs looking to establish themselves as developers of social homes in Wales, expectation will be made be clear at the outset.
• **From ‘Pre Fab to Ab Fab’: manufacturing homes the Welsh Way - Our expectations**

To qualify for Welsh Government investment, all social and affordable homes produced should meet the [Development Quality Requirement](#), commonly referred to as DQR. The requirement will be regularly refreshed to reflect the quality of homes the Welsh Ministers wish to see built. Welsh Ministers will set the standards expected for OSM solutions that receive public subsidy – the market will be expected to come up with the innovative solutions that meet those standards.

Constructing well vetted designs with a controlled workforce off-site has the potential to vastly improve build quality. DQR will balance the tension between the need for greater control in construction in Wales and the need for flexibility to innovate. Rather than a ‘presumption of favour’ for either traditional or OSM approaches to homebuilding, Ministers will level the playing field. All social homes which meet the standard will have the opportunity to apply for Welsh Government investment to build homes, however they are produced.

• **A Building Performance approach levels the playing field**

OSM promises significant improvements in the delivery of site quality that could support tackling some of the causes of the “performance gap” in construction.

An outcomes-based approach means defining the final results of the construction process, not the means of construction, by setting performance standards for the completed buildings rather than specifying particular requirements for OSM. These standards will relate directly to the wider ambitions of Welsh Government to deliver a Low Carbon Wales. In the context of construction, this includes tackling carbon emissions directly through reducing and decarbonising energy demand, as well as indirectly through tackling current poor site quality, lack of skills, high embodied energy and the low levels of effective reuse of building materials and components.

Setting a performance standard benchmark that captures elements currently not measured (such as Performance Gap) means that the comparison between traditional on-site construction and OSM can be made on a like-for-like basis, and removes the quality argument, commonly put forward by OSM providers that their products achieve a higher standard.

In consequence, for traditional construction, it provides an additional driver to place greater emphasis into actually delivering finished construction quality, securing skills, understanding Circular Economy and quantifying Embodied Energy.
For traditional construction, this effectively means actually delivering what was already thought to be included in the price though, all too commonly, is missed on site. For OSM, it removes the potential to hide higher prices behind a ‘quality argument’, but, by pushing traditional construction to deliver to the same (higher) standards, enables a true comparison between the delivery routes.

Performance standards therefore represents a “delivery neutral” solution that allows the best quality of OSM and traditional construction to deliver the outcome Wales needs – a quality built environment – and leaves the means of delivery the potential to develop as differing markets mature.

As part of DQR, it may be expected that homes will be zero carbon, BIM level 2, and meet specified space and ‘U’ Values.

Financial appraisal models will be explored which assess schemes seeking subsidy to support their development. Acceptable Cost Guidelines (ACGs) will be considered alongside alternative financial models which already exist for scheme appraisal.

Housing providers should be able to demonstrate the integration of technologies such as those developed by the Active Building Centre into new homes. Ideally these should be designed in from the start of the manufacture process. Whilst the technology, (particularly if it is emerging) will increase costs initially, integration and adoption within the manufacturing process will help to reduce cost over time.

• **Big Data - Monitoring Building Performance**

Off-site manufacturing presents the opportunity to manufacture using technologically advanced methods to consistent and testable standards. Standardising components can improve the quality of those components through iterative testing of their performance, analysing this data and adjusting for future production. Digitising manufacturing and assembly processes results in more precisely constructed end-products with maximised performance, and less time spent ‘snagging’.

As a condition of grant, housing providers are expected to monitor the performance of their OSM produced homes and the tenant experience of living in them. It is expected monitoring and evaluation will mirror that established by the Innovative Housing Programme. The information will be continuously gathered over time and returned to Welsh Government to become the biggest social housing OSM performance data set in the UK. The data will allow the Welsh housing sector to access and share information to accelerate innovation and learning in the industry in the short, medium and long term.
6.3 Developing high value rather than low cost procurement models to reflect whole life costs of new build and provide more development options for housing providers

It is not possible to change technologies of production without changing business and procurement models. Different approaches to procurement are required to facilitate more homes being built by OSM. Models which support commissioners to make decisions to support Welsh business and the local economy, rather than actively work against it will be supported. New procurement models will focus on whole life rather than up front-costs. Current procurement practice will less restrictive and less risk averse, favouring high value rather than a race to the bottom with low cost. Value for money remains important.

Housing providers spend more on maintaining existing stock than building new homes. 86% of the cost of the average home relates to its maintenance. Consideration will be given to mandating the use of Building Information Modelling (BIM) to reduce this substantially.

6.4 Establishing standardised approaches to design and manufacture to drive up volume, drive down cost and build more homes

- **Beautiful design on a uniform chassis**

Beautiful design will be expected as standard. Standardisation in the manufacturing process does not mean homes should be unattractive homogenous boxes which are undesirable to live in. Homes should be designed to meet the needs of people with permanent, temporary, situational, or changing physical ability. Homes funded with Welsh Government investment should aspire to ‘affordable fabulousness’.

In order to save time and reduce waste, and build homes people wish to live in, Minister’s wish to see demonstrable evidence of how tenants have influenced the design of homes produced by OSM. Tenants know what they like and don’t like. Ministers expect tenants to influence the design elements which matter to them, while still allowing for mass production.

When schemes are put forward for funding, Welsh Government technical scrutiny team will consider how tenants’ views have shaped the scheme.
- **Ready-to-use design**
  Standardisation and repetition are vital to efficient OSM manufacture. It is expected a balance between standardisation and customisation should be struck.

To fully extract the benefits of design for manufacture and to enable a systems-based approach to production, standardisation is possible, necessary and acceptable. Using the commonplace car production model, the design for manufacture and assembly approach allows advanced manufacturing of the chassis, with a componentry platform which shares a common supply chain. At the end of production, the product can be individualised with a range of looks, finishes and feature combinations. We will not allow the production of social housing that is identifiable because they comprise uniform standardised boxes. We expect social housing to be customised in the OSM process to provide elements of visual diversity in the housing landscape.

Standardisation and precise material sizing results in less waste during production while fewer personnel and materials movements during manufacturing processes mean less congestion and air pollution. Precise manufacturing and assembly using digital testing (including of air leakage) mean more air-tight buildings with better efficiency performance that those of traditional construction methods. This is increasingly important in Wales where eliminating fuel poverty remains a priority.

Standardisation will drive down the cost of homes, but not at the price of quality. On the surface, MMC produced homes will be indistinguishable from traditionally constructed homes. The difference in production will only be discernible in how tenants may need to behave and live in them to reap the full benefits of an MMC produced home.

Nonetheless, for some tenants, particularly the most vulnerable, unfamiliarity with the features of zero carbon homes and heating and ventilation may cause undue distress. It is therefore expected homes produced using the Welsh ‘chassis’ and benefiting from Welsh Government investment will be allowed to be let as part of a local lettings policy. This will alleviate tenants concerns that vulnerable people, with the least choice in the housing market are being exploited to test new approaches to house building. As such, tenants will be able to choose whether to accept a new build home produced by OSM, with no adverse consequences to their position on the waiting list.

- **Standardised skills accreditation**
  A new set of nationally recognised OSM construction qualifications will be established. Production, rather than traditional construction qualifications will close the current skills gap. Young people entering the workplace need to be equipped
with the digital skills needed for modern methods of construction, including off-site manufacture. It is important that the requirement is reflected in post-school training provision, but also in the school curriculum so that the next generation have the basic skills necessary to undertake more specialist training.

Perceptions of the types of jobs available in the construction sector are based on the skills needed for on-site construction. There is a need for a single industry platform to support construction careers and promote the new types of careers in construction to the next generation.

6.5 Supporting the manufacture of homes in Wales, in a way which contributes to broader governmental social and economic ambitions

OSM is more than just house building opportunity; it’s about the way the homes of the future can be built to have the most benefit for the people of Wales. It is expected that housing providers can demonstrate excellence not just in home design and quality, but in how their production supports the Welsh nation, and the well-being of future generations.

**Welsh First**
In developing a buoyant Welsh OSM industry, organisations should take the opportunity of building homes in new ways to maximise local supply chains and support Welsh componentry. Research shows there are a variety of construction materials used currently to manufacture homes, all equally able to gain the necessary accreditation and assurances. It is expected however, that materials and components selected should be considered in terms of their social ethical value, such as a ‘Welsh First’ approach.

*Welsh First means that when developing products and services, preference is shown towards materials and labour sourced locally, and within Wales, before seeking alternatives from the wider global economy.*

Welsh First implications for OSM currently favour steel, as there is a mature steel industry in Wales. Welsh timber can be sourced locally but is an immature market. Due to its potential to support the circular economy in Wales however, Welsh timber will become increasingly available to utilise in OSM, and expected to be maximised in the production process.
• **Welsh timber and the Circular economy**

Wood is the only widely available highly developed industrial material whose greater use in construction could help to mitigate climate change. In general, it takes less energy to convert trees into useful construction products when compared to other materials. Equally the use of wood creates a long-term store of carbon in the built environment. New engineered wood products such as glulam is enabling timber to move from low-rise into medium-rise.

> “Is timber the wonder construction material of the 21st Century? Wood is the only widely available highly developed industrial material whose greater use in construction can provide a significant part of the climate change solution “.  
>  
> Confederation of Forest Industries - 2019

The rise of off-site manufactured housing is providing a high-value market for Welsh grown and processed timber and can be expected to become a key driver for forest expansion in Wales. This in turn can deliver much needed jobs in forest management and wood processing particularly in rural areas. The continued rise of manufactured housing provides the potential to create reliable flows of timber from forest to factory allowing for regional integration and delivering substantial benefit to the Welsh economy.

Whilst there is insufficient Welsh grown timber right now for to be incorporated into the OSM in Wales, this doesn’t have to be the case in the future. The Welsh Minister’s expectation is that OSM is a catalyst for a change in the way Wales’ forestry natural assets are managed, in order to bring forward more Welsh timber for use in home manufacturing supply chains in the medium and long term.

• **Exactly who will manufacture OSM homes?**

OSM presents an opportunity to create new employment, especially in communities hit hardest by industrial decline. In a vibrant OSM market, with multiple factories required to service the Welsh social housing development pipeline, hundreds of new jobs may be created. The work relies on precision application of low skills, thus barriers to entry are lower than for traditional construction work. It is expected that a more diverse workforce will be engaged in new home production. OSM presents an opportunity to welcome more women into the construction sector, and those furthest from the job market including veterans, prisoners, those Not in Education, Employment or Training (NEETS) and those with learning disabilities.
OSM can deliver safer employment. Construction is ranked in the top four most dangerous industries in the UK in terms of injury and fatalities. Off-site manufacture moves a greater proportion of the end-to-end delivery of new housing into climate-controlled factory environments, reducing exposure of both the workers and products to dampness and temperature changes. Process engineering reduces the chances of hazards, injuries and accidents.

- **Local jobs for local people**

The Better Jobs, Closer to Home Programme (BJCtH) seeks innovative ways to create jobs, through more effective utilisation of the £6bn spent by the Welsh public sector on works, goods and services. Building on existing work to boost the Welsh timber supply chain (beginning with tree planting), Welsh Government resources will continue to be made available to realise the opportunity OSM represents for major local job creation; establishment of accredited qualifications in OSM and a major contributor to the Well-being of Future Generations Act.

### 6.6 Collaboration and partnerships

To fully realise the potential of OSM to build better homes, and deliver positive outcomes through the build process organisations are expected to collaborate. Consultations and the call for evidence for the Affordable Housing Review almost all parties recognised the need to work together as a sector.

Combining the dispersed knowledge within the sector from residents and asset managers, combined with leading architects and off-site providers will be a game changer for housebuilding in Wales. Leveraging the collective buying power of the sector has the potential to unlock significant savings through both time and cost savings. Meaning more homes for those who need them.

Combined development pipelines should be established, Housing Associations and LHAs will be expected to take the initiative and form effective collaborations. Such working together should be entirely voluntary between entities, but it should be noted public funding is unlikely to be forthcoming for homes produced by individual organisations working alone.

Authentic collaboration is to be encouraged between LHAs and Housing Associations, between housing providers and SMEs, between private off-site manufacturers, and between different parts of the public sector.
Private sector organisations are expected to explore opportunities to share overheads, supply chains and labour pools with competitors. This approach will best leverage the opportunity to grow regional hubs, centres of excellence and share learning to benefit the market in Wales. Most SMEs provide a variety of approaches and products. At this stage of the emerging market there are opportunities for a variety of OSM actors to collaborate and accelerate their contribution to increasing social housing supply.

- **Collaboration with HMP - OSM in the community**

Within the Welsh prison estate there is the opportunity to provide the UK’s first multi-skilled, construction academies for men currently serving custodial sentences. These will provide offenders with the skills required to complete every part of a home build, from the foundation upwards. Collaboration will be formed with local SMEs creating innovative housing solutions, including organisations at the forefront of modular housing advances. This will enable an entire home to be built within a prison workshop. Existing skills provision within prison will be redirected to support local skills gaps and the needs of our employment partners. This will include NVQ’s, CSCS cards, on the job training and city & guilds diplomas.

Meaningful work changes lives. It provides purpose, structure, support networks and financial security. Time spent in prison is an opportunity to engage people with employment, generate new skills and create routes out of poverty. For offenders that are committed to change and want to turn their lives around, work placements can serve as a pathway to a better life. For those willing to engage, the system will ensure that when an offender enters prison they will be put, immediately, on the path to employment on release. This means:

- Rigorous assessment of each prisoner’s education level at the beginning of and at key points during their sentence, to understand each individual’s starting point and measure progress.
- Education and training which is responsive to individuals’ needs, is properly integrated into prison regimes and delivers what employers are looking for.
- Prison work, provided by employers with easy access to prisons and work placements on day release which help prisoners build towards employment opportunities on release.
- Impact on reoffending.
Recent Ministry of Justice research\(^2\) has shown that reoffending rates drop by around 50% for men with P45 employment in the first year after release. This creates real savings to the public purse, as across the UK reoffending costs the taxpayer around £15 billion per year\(^3\).

Data published by the Ministry of Justice and Department for Work and Pensions (DWP) in 2014 showed that 28% of Jobseeker’s Allowance claims were made by individuals who had been convicted or cautioned.\(^4\) As well as financial costs, there is the wider human cost to families and society. In 2015–16, 38% of adults convicted of an indictable offence already had a long criminal record.\(^5\)

Historically, the construction industry has provided a stable, non-judgemental working environment for ex-offenders. The ambitious infrastructure pipeline in Wales requires skills beyond what is currently available. By harnessing the talents of offenders, OSM can help create safer communities and give Wales a workforce with the flexibility and capacity to meet future demand.

### 6.7 Providing capital funding for factories and start-up costs, and SME support to help the OSM industry in Wales grow and flourish

- **The Foundational Economy - support for OSM manufacturers**

  The foundational economy can be supported in Wales by growing SMEs in the manufacturing sector, to be the prime producers of the next generation of new social and affordable homes. As the market continues to mature and more technology and approaches to home production evolve, small, medium size enterprises (SMEs) are well placed to respond to market conditions. There is a recognition that there is an embryonic cottage Industry in Wales already providing OSM solutions in the commercial, education, and private development markets. Usually theses are SMEs which will be encouraged to flourish alongside new entrants to the Welsh market.

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\(^3\) [http://data.parliament.uk/writtenevidence/committeeevidence.svc/evidencedocument/work-and-pensions-committee/support-for-exoffenders/oral/42417.pdf](http://data.parliament.uk/writtenevidence/committeeevidence.svc/evidencedocument/work-and-pensions-committee/support-for-exoffenders/oral/42417.pdf)

\(^4\) Experimental statistics from the 2013 MoJ/DWP/HMRC data share: linking data on offenders with benefit, employment and income data. Claims as at 1 December 2012. These statistics are experimental. As not all offenders were included in the matched data, these are likely to be under-estimates for the total number of individuals in the matched data claiming benefits on 1 December 2012.

\(^5\) Criminal Justice Statistics Quarterly Update to March 2016. Long criminal record = 15 or more previous convictions or cautions.
Government support is available to SMEs in a number of forms;

- Access to financial support to assist with capital investment in factory and plant
- Access to skills, expertise and resource to get onto procurement networks and bid for contracts to secure constant pipeline
- Encouraging the use of vesting certificates alongside an appropriate payment structure will be supported. These share the risk between parties, rather it lying will SMEs alone and ensures the asset is owned by the housing provider at point of payment.
- Access to finance products such as ‘project based accounting’ and specialist cash flow models which are tailored to support advanced manufacture, and can replace traditional development cash flows
- Providing 3-5 year grant funding certainty to Housing Associations, to help manage their development pipeline. A forecastable order book for new homes manufactured off-site will support the investment of private capital into factories by creating sustainable factories.

**Land availability and site suitability**

The formation of a new land agency will help supply new sites as the lack of land supply is one of the primary obstacles to increasing the supply of homes. This will complement the existing land protocol. There is the opportunity to bring forward more public sector land at below market rates for social housing, at prices which mean more housing developments are financially viable.

More land suitable for modular construction is required to bring forward more homes. Sites will need a short initial assessment to ensure suitability for modular, taking into consideration design for manufacture and assembly to ensure for example cranes and modules can be delivered to site.

While this strategy focuses on bringing forward more OSM to help increase the supply of social homes in Wales, some of the constraints including land availability, aspects of the planning process, a seeming dearth of groundworks companies to prepare sites across Wales, issues with utility provision to sites in a timely fashion require attention. It is necessary to further involve those agencies in smoothing the end-to-end process in order to effectively implement the proposed actions to make it happen.
## 7. Action plan - Making it happen

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<tr>
<th>Key Objectives</th>
<th>Actions</th>
<th>Who</th>
<th>When</th>
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| 1. Developing rings of assurance, warranties and accreditation and lender confidence | - Increase confidence in OSM product by recognising and adopting UK assurances and definitions  
- Adopt UK OSM product accreditation marques  
- Securitise an OSM produced housing scheme | | |
| 2. Setting building performance requirements for all social new build homes in Wales | - Set building performance requirement  
- Amend the current DQR standard  
- Publish Ministerial expectations for housebuilding  
- Publicise the standards and use existing WG resources to support SME’s to bid for Welsh Government funding | | |
| 3. Establishing standardised approaches to design and manufacture to drive up volume, drive down cost and build more homes | - Share the synopsis of the Year 1 funded Innovative Housing Programme funded research into optimum OSM solution for Wales, to share learning with organisations pursuing an OSM solution  
- Encourage tenant participation in the design of homes  
- Raise awareness of common parts whilst promoting individuality | | |
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<th>4. Supporting home building which contributes to broader governmental social and economic ambitions</th>
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<td>• Realise a Welsh ‘chassis’</td>
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<td>• Guarantee all OSM built homes to be let as part of local lettings policy</td>
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<td>• Match people on the waiting list to new build house produced by OSM, and protect their place on waiting list if they decline the offer</td>
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<td>• Establish a set of nationally recognised OSM manufacture qualifications both in school and post school</td>
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<td>• Roll out IHP standard monitoring and evaluation to all OSM produced homes and fed back data to the Welsh Government as part of existing return information</td>
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<td>• Data to be shared across the sector to allow for continuous learning, innovation and improvement</td>
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<td>• The Welsh Government, in addition to stimulation and aggregation, should act as an integrator to get SME builders re-purposed to become ‘licensed assembly teams’ linked to manufacturers.</td>
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<td>• Ensure social home building contributes to the wellbeing of future generations</td>
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<td>• Support local supply chains and develop the Welsh First approach</td>
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| 5. Developing high value rather than low cost procurement models to reflect whole life costs of new build and provide more build options for housing providers | • Develop a whole life cost procurement model  
• Focus on high value low cost models which support a Welsh First approach to procurement  
• Build on and where necessary establish OSM procurement frameworks for Wales, and support SMEs to get on them and bid for a greater proportion of market share  
• Make land sites available in a way that makes more schemes financially viable  
• Remove land price from the Acceptable Cost Guidelines  
• Consider alternatives to ACG to financial assessment models for scheme appraisal |
| 6. Providing capital funding for factories and start-up costs, and SME support to help the | • Grow existing and new SME’s in sector to be producers of social housing |
| industry in ways grow and flourish. | • Form business development relationships with all current OSM manufacturers in Wales to ensure SME’s are aware of and can access support and investment  
• Actively seek sites suited to modular construction |

7. Address issues which delay and add cost to the development process in Wales, which affect both OSM and traditional constructors | • Respond to concerns raised by Design Commission for Wales about constraints to the planning process in their February 2019 paper to Ministers following Year 2 Innovative Housing Programme reflection  
• Consider issuing a TAN or SPG incentivising a planning culture which rewards the approach ‘to approve’ plans default position, rather than refuse as a default position. Any affordable housing scheme in the LDP, meets the design and standards parameters and declined planning should be compelled to publish a detailed rationale for refusal to enhance transparency of decision making  
• Explore forming a public groundworks business which can make ready sites, using local labour to fill skills shortage and address capacity issues in the market.  
• Influence utilities to provide better value for money and provide critical service infrastructure to schemes in a co-ordinated and timely manner. |