



Llywodraeth Cymru
Welsh Government

Innovative Housing Programme

Demonstrating energy efficiency
and zero carbon homes

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Innovative Housing Programme

Aims and Objectives



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‘What is Innovation’

Innovation can be defined simply as a "new idea, device or method". However, innovation is often also viewed as the application of better solutions that meet new requirements, unarticulated needs, or existing market needs.

Speed of Adopting New Innovation



5th Avenue, New York, 1900

***“Everything that can be invented
has been invented.”***

Charles Duell, Commissioner of US
Patent Office, 1899

5th Avenue, New York 1913

Spot the horse?



Aims and Objectives

The programme aims to create demonstrator schemes to help inform us about the type of homes we should support in the future.

The Programme is over three years and seeks to stimulate the design and delivery of new quality, affordable homes to:

- increase supply as part of the 20,000 target;
- speed up delivery of homes to the market;
- trial new housing models and methods of delivery that address issues such as:
 - pressing housing need;
 - fuel poverty;
 - demographic change; and
 - help carbon reduction targets
- prove the replicability of innovative housing models.



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Technical Specification

Context

In 2016-17, as part of the Welsh Government's *20,000 additional affordable homes* target, the Cabinet Secretary for Children and Communities asked Welsh Government officials to develop a new programme to support the development of new approaches to delivering housing in Wales. £90m was set aside to support schemes in the programme.

Aims of the Programme

The Innovative Housing Programme (IHP) aims to:

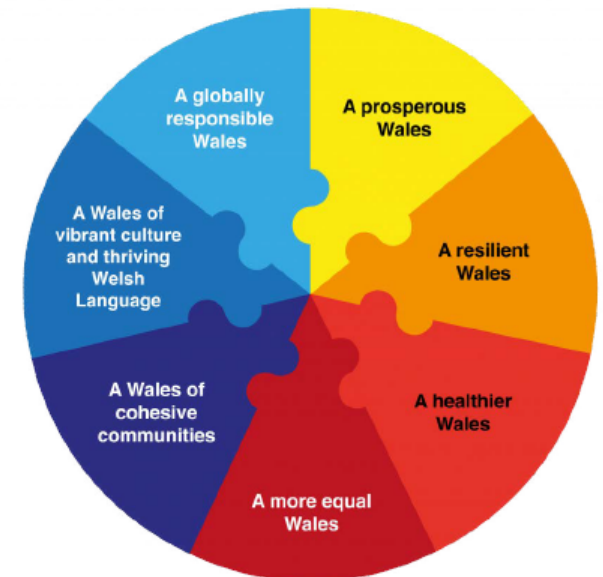
- increase the supply of affordable housing in Wales, as part of the *20,000 additional affordable homes* target.
- align with the seven goals enshrined in the Wellbeing of Future Generations Act (WFGA).
- address cost and value in new homes, and develop housing that meets specific current and future housing needs.
- provide support for those willing to innovate through the use of alternative approaches.
- demonstrate benefits associated with alternative approaches, to encourage their wider uptake.
- harness opportunities to deliver jobs, skills training, and develop local industry.
- publicly disseminate key findings and maximise learning.

Aims of the IHP Technical Specification

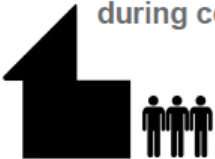
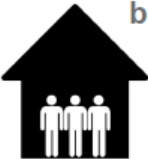

The IHP technical specification establishes an evaluative framework by which applications for support from the IHP will be assessed and considered.

In line with the aspirations of the programme itself, the IHP technical specification aims to be open-ended and non-prescriptive. It seeks to avoid placing additional demands on projects that apply for support. It insists only on the agreement of the project team to share findings openly and maximise learning, and a 'baseline minimum' specification for all supported projects. All projects should demonstrate clearly how the overall project aligns with the seven goals set out in WFGA. Projects are also required to clearly define innovation and potential for impact in at least one - but not more than three - of the seven WFGA goals - see diagram.

The IHP Technical Specification will continue to adapt and develop in the future.



Potential benefits associated with housing, as they relate to WFGA

	 <p>during construction</p>	 <p>benefits in use</p>	 <p>wider benefits</p>	
WFGA goal:	short term benefit:	medium term benefit:	long term benefit:	focus:
globally responsible	low embodied CO ₂ locking in carbon	reduced carbon footprint potential for carbon negative	decarbonising communities meeting international targets	CO₂
prosperous	addressing cost and value local resource use	more affordable housing supporting Welsh supply chain	affordability, local economy skills and community building	capital
resilient	robust, low maintenance changeable by the community	resilient to climate change accessible construction	adaptability and resilience reskilling and empowering	change
healthy	natural resource use breathable construction	healthy internal environment reduced impact on environment	positive health benefits reduced strain on public services	health
more equal	low embodied energy reduced heating bills	energy generation offsetting rental costs	affordable warmth for all energy positive homes	energy
cohesive communities	flexibility in layout constructable by end user	long life loose fit 'other' procurement pathways	meeting specific housing need flexible, high quality homes	space
thriving culture	variety in form and materials suitability to different contexts	building strong neighbourhoods creating places with character	supporting people, communities and distinctive places	place








To be eligible for IHP support, proposals...

MUST commit to an 'open book' policy, including the following:

- **regular progress reports** to the IHP working group.
- **monitoring** during and post construction.
- **data collection** (particularly cost and performance).
- **public dissemination** of key lessons learnt.

CRITERIA 1

SHOULD demonstrate how they will*:

-  be carbon-conscious in terms of both construction and lifecycle.
eg. SAP calculation, materials specification
-  compare capital costs against costs in use, be robust and consider maintenance.
eg. cost analysis, life-cycle costing
-  Provide long term constructable solutions. Develop skills, resources, community benefit.
eg. local supply chain, apprenticeships.
-  provide healthy comfortable homes that promote wellbeing and avoid health risks.
eg. materials specification, daylight factors
-  be affordable to run and to heat, addressing household fuel poverty.
eg. SAP comparison with benchmark
-  provide sufficient space to meet users' needs be flexible in use, future-proofed.
eg. delivered space standards
-  integrate into their neighbourhood and create places people will want to live in.
Applicants should undertake DCFW** review.

* The demonstration of compliance is not limited to the examples given in grey, which are for illustrative purposes only.

** See Design Commission for Wales website, <https://dcfw.org/>

CRITERIA 2

WILL innovate in at least one but not more than three of the seven focus areas, for example:

-  **CO₂**
 - decarbonising communities
 - meeting international targets
-  **capital**
 - affordability
 - programme
 - delivering better value
 - supporting local economies
-  **change**
 - buildability
 - adaptability
 - resilience
 - developing skills
-  **health**
 - positive health benefits
 - reduced pressure on public services
-  **energy**
 - affordable warmth
 - improvements in energy efficiency
-  **space**
 - meeting specific housing need
 - flexibility and functionality
-  **place**
 - supporting people and communities
 - delivering high quality design.

CRITERIA 3

criteria 1. MUST

For a project to be eligible for support from the IHP, the project team must agree to comply with the four 'MUST' criteria, committing to an open protocol for disseminating key findings and maximising learning.

criteria 2. SHOULD

Projects should meet all seven criteria 2 requirements set out on page 4 (which provides examples of methods that demonstrate compliance) OR provide a justification why any and each of the 'SHOULD' requirements are not proposed to be met.

criteria 3. WILL

Projects will be rank ordered based on their ability to deliver both innovation and impact in one or more of the focus areas:

low score	modest innovation limited potential impact
med. score	meaningful innovation clear potential impact
high score	radical innovation significant potential impact

Innovation in more than one focus area will improve the ranking score. However, it should be noted that the IHP aim is to support projects that show real potential to innovate and impact on housing delivery, not to support projects that offer marginal innovation across a wide range of areas.

IHP evaluation: building a resource

All IHP projects will be evaluated at a baseline level across the seven Wellbeing focus areas, to capture basic project data and to ensure comparability of data across the projects. They will be evaluated against standardised metrics, both during and post construction, and after occupation.

Each IHP project will also be evaluated in more detail, in a focussed way. The detailed evaluation will concentrate on the focus area to which the proposed innovation relates. The intention is that this data will be used to create a valuable resource for anyone involved in the future commissioning, procurement, or delivery of housing in Wales.

There will be a standardised methodology for data collection and evaluation across all IHP projects, to maintain comparability. It is the intention that costs directly incurred through evaluation (purchase / installation of hardware, and the evaluation itself) will be borne by the IHP. The precise methodology for evaluation will be developed during Year 1 of the IHP.

IHP SUPPORT

The IHP technical specification was produced under the direction of the IHP Steering Group, and authored by the Technical Working Group.

If you have any queries with this Technical Specification please contact the Innovative Housing mailbox:
InnovativeHousingProgramme@gov.wales
or telephone 0300 062 8402.



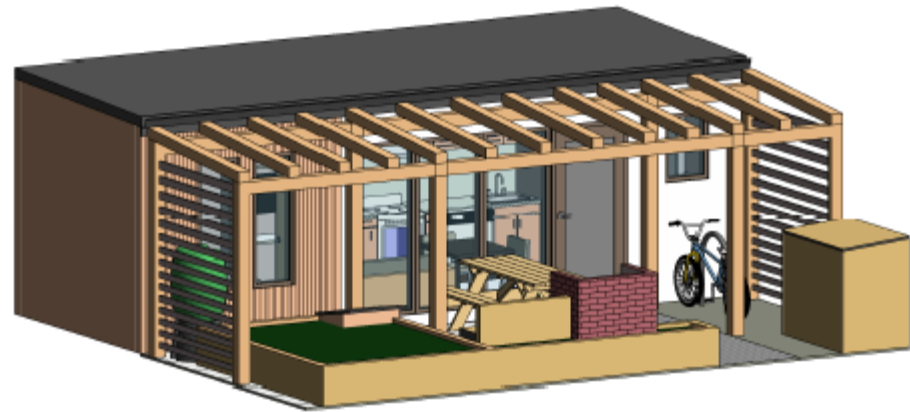
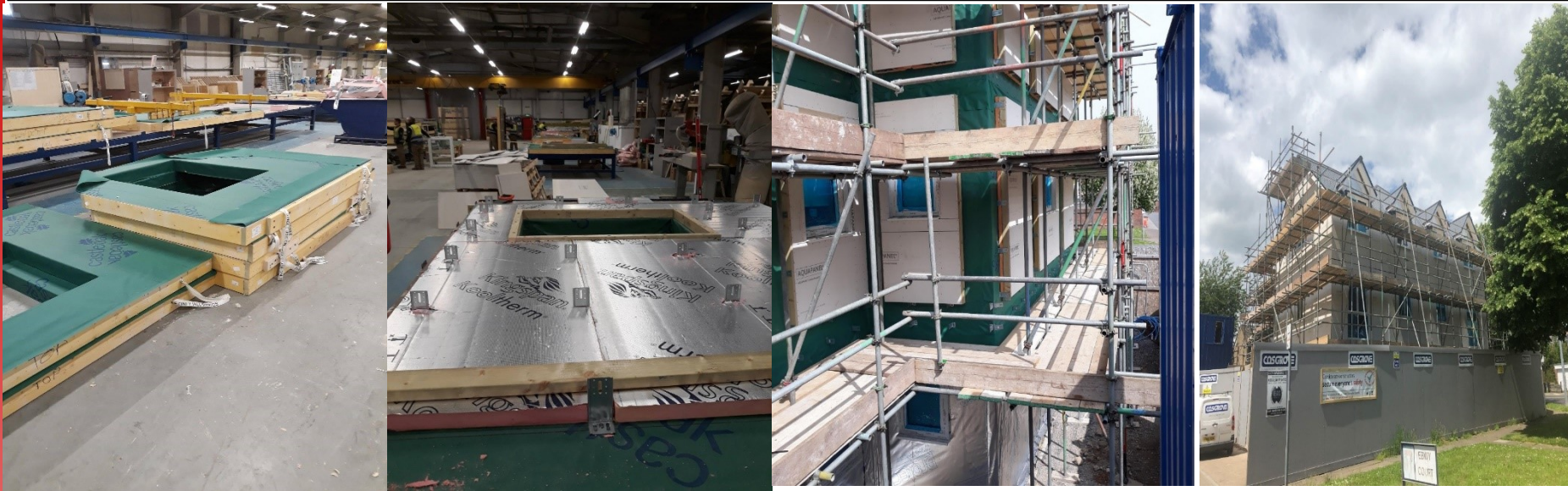
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Examples of Supported Schemes

IHP – Year 1



IHP – Year 2



IHP – Year 3

The Proposal – Vertical Farm & Research Centre



ARCHITECTS

IHP – Year 3



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Monitoring and Evaluation

Monitoring and Evaluation

The minimum hardware required to be installed in the house/apartment to be able to monitor our requirements:

- 1 mains supply and 1 wired data connection in the living room.
- 1 mains supply and 1 wired data connection adjacent to the main hot water pipe.
- Ensure each home is wired to enable a 'smart' energy meter can be installed.
- Ensure each home has regulated, unregulated and renewable electricity on separate circuits from the consumer unit for metering purposes.
- Solely for homes that make use of gas for both the cooking appliance and heating to have a secondary gas meter to monitor gas cooking usage.

Monitoring and Evaluation

- All schemes will be required to provide access for third party to install monitoring meters.
- All schemes to provide advisory note to occupant and secure consent for installation and use of data.
- All schemes to provide access and consent for installation of a weather station at a suitable location. Unless impossible, provide mains power connection at location.
- Provide access to design, construction, maintenance and facilities management teams for one full day workshop on lessons learnt.



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Learning Events



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Any Questions?