

Swansea Council Building Better Homes

Rising to the climate change challenge:
The role of construction, housing and planning within local councils



Chris Cutforth – APSE Glasgow - February 2023



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Swansea Council

But First – Some Context

- Coastal City in South Wales located on 5 miles of sweeping bay and mouth of river, valleys and breath taking Gower peninsula
- Swansea is Wales 2nd largest City & has a footprint of 150 sq. miles
- Population of 314,000, representing circa 10% of the Welsh population
- Swansea is home to 2 major Hospitals, DVLA and 3 Universities
- Recent recipients of £1.3 billion City deal investment



Interesting Facts

- Swansea was founded by King Sweyn Forkbeard of Denmark during his reign of 986-1014
- During the 18th Century, Swansea was a World leader in the Copper smelting industry, with the region commonly known as Copperopolis
- TripAdvisor voted Rhossili Bay “Best Beach in the UK” and 9th “Best Beach in the World” in 2014
- Swansea was the birth place of Dylan Thomas who famously labelled the City “an ugly lovely town”

© Alamy

Context

- **Swansea Council is a Member led organisation**
- **Swansea have a retained Housing stock of 13,700 homes**
- **Swansea's direct labour organisations delivers an end to end construction services, across the Authority, based in the Place Directorate**
- **Building Services (BS) deliver all building & property related functions across the Authority's Housing stock and 620 Public Buildings.**
- **BS annual turnover is circa £80m – 60/40 split of internally delivered / externally procured schemes**
- **BS employ 800 staff and 70 apprentices across a wide and varied scope of manual and professional disciplines. Over the last 20 years, BS have replaced 70% of its ageing trade resource through its apprenticeship program 271 recruited**

Key Points

- Demand driven need for social housing in Swansea currently have 3,500 presenting as Homeless
- Fact finding pilots – PassivHaus accredited standard, 4 year Plan to deliver pilot energy efficient Homes
- The emergence of the Swansea Standard specification
- Cabinet agree a plan to develop 1000 homes over 10 years 2021-2031 following successful pilots
- #OneCouncil approach – schemes designed and built and delivered by our in house Service Teams
- Journey to date

Drivers

- **Council's desire to drive own new-build housing programme underpinned by key political and corporate priorities including Tackling fuel poverty & Reducing homelessness.**
- **Develop highly energy efficient & environmentally conscious homes which**
 - **Reduces primary energy demands**
 - **Reduces carbon emissions**
 - **Reduces energy bills**
 - **Welsh Design Quality Requirements (WDQR) and Lifetime Homes compliant**
 - **All have private gardens and accessible green space**
- **Building homes and communities, not just houses – creating environments which are comfortable & contribute towards positive health & well-being**

The Journey



Pilot 1 Accredited PassivHaus scheme

Emerging Issues

- Carbon footprint impacts
- Add-on to PassivHaus model
- Well-being Future Generations (Wales) act 2015 - impacts
- Supply Chain issues
- Lack of development opportunity - In-house, fast tracked, modern construction methodology skill sets
- Fabric risks – Telecommunication installers
- Front end investment – end user usage

Swansea Standard -HAPS

- Set out to achieve a 25% uplift on Building Regulations thermal performance standards of primary elements and a fabric first approach
 - Timber-frame structure and floors – highly insulated
 - High performance doors & triple-glazed windows
 - Improved air-tightness ($5\text{m}^3/(\text{m}^2.\text{hr})@50\text{Pa}$)
 - Cold bridge eradication
- Recognisable construction form – efficiencies in term of scalability
- Can be combined with other technologies
- Ground Source Heat Pumps (GSHPs), PV solar roofs, battery storage and Mechanical Ventilation Heat Recovery (MVHR) System

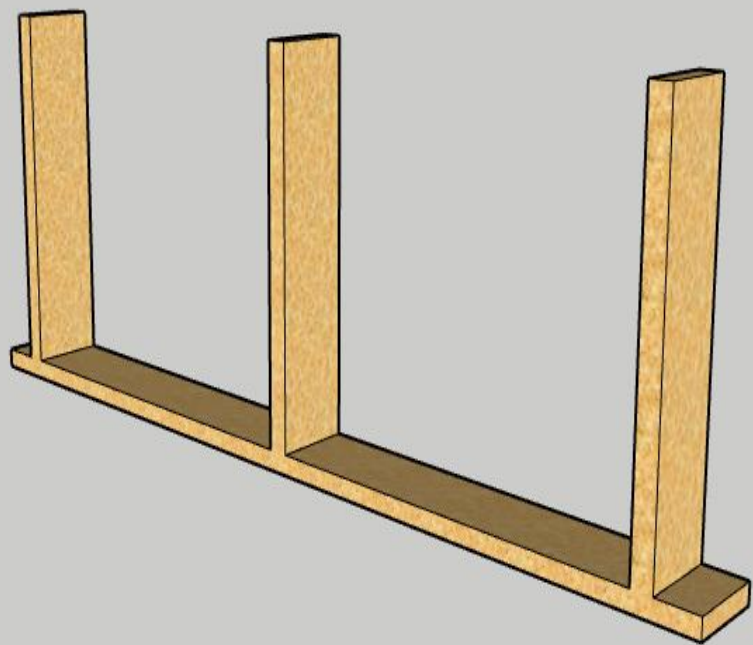
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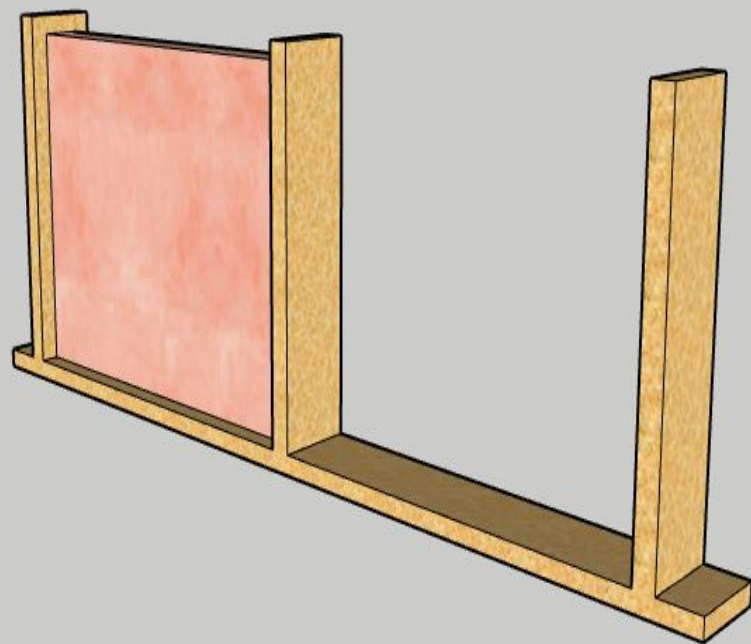
- The ‘Swansea Standard’ is a carbon conscious, whole-system build approach which reduces operating energy and CO₂ emissions over the buildings life-time.
- The construction form is a ‘fabric-first’ approach – focussed to achieve at least a 25% improvement above the thermal performance prescribed in current Building Regulations (2013).
- The thermal envelope consists of a highly insulated timber-frame with integral components of high-performance doors & triple glazed windows, ensuring high thermal values, low air-leakage and reduced space energy heating demands and emissions

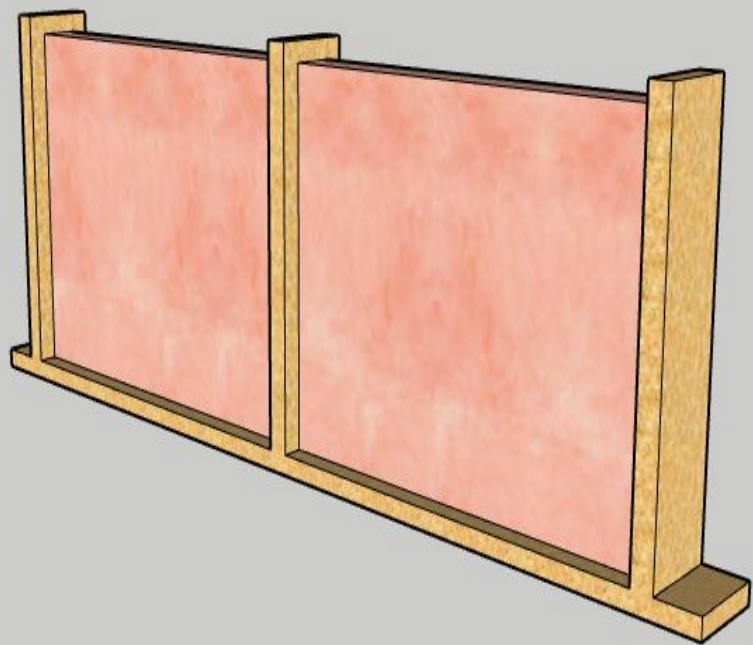
The Construction

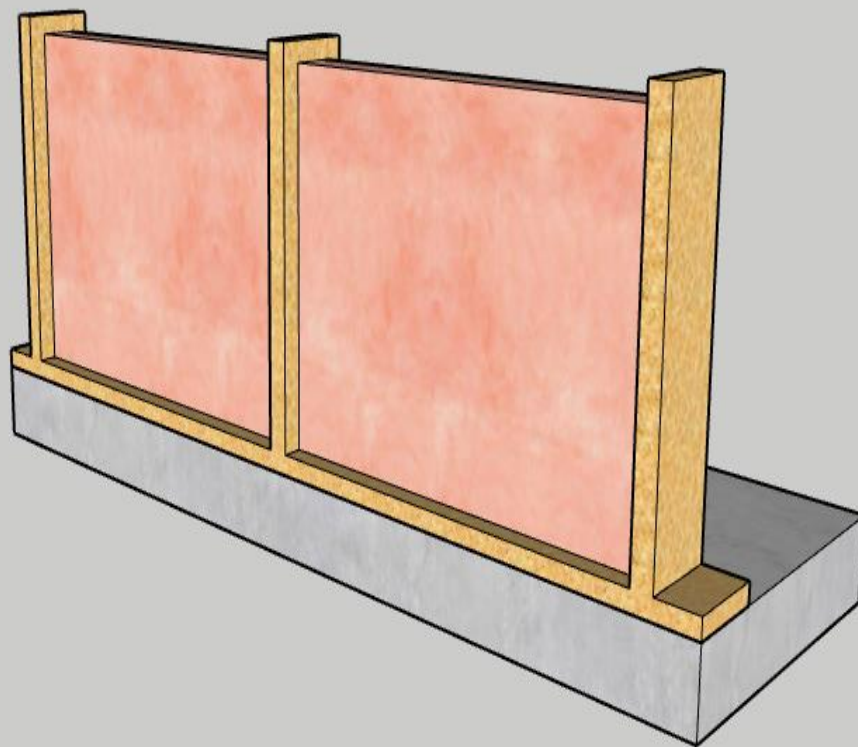
- 50% Increase floor insulation
- Plasterboard & skim finish
- Ply internal face to frame
- 90% Increase of timber frame
- 90% Increase of wall insulation
- OSB board face / vapor barrier
- 50mm insulation cavity bat
- 25mm cavity increase (75mm)
- 75mm concrete block
- External finish
- Triple glazed windows
- Warm roof

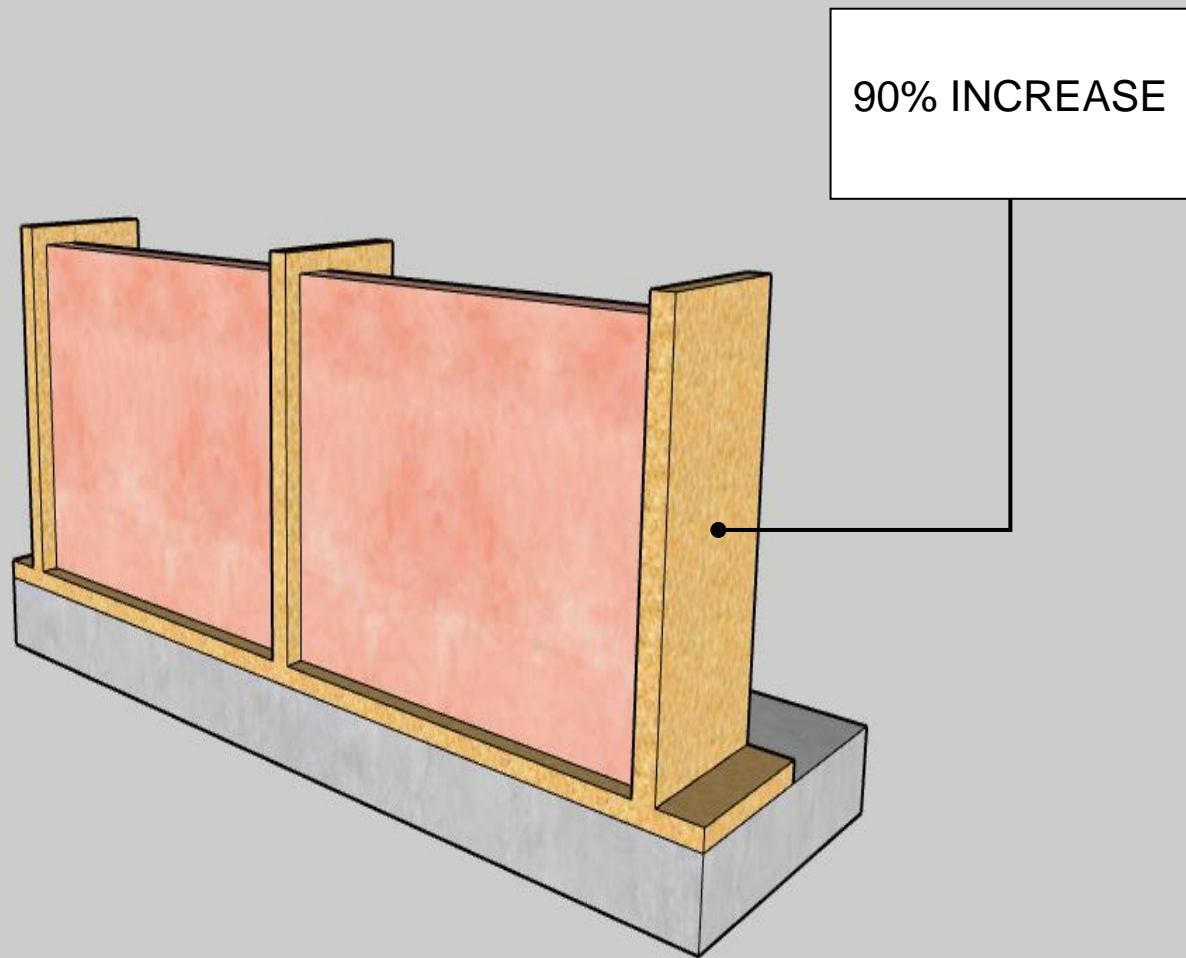


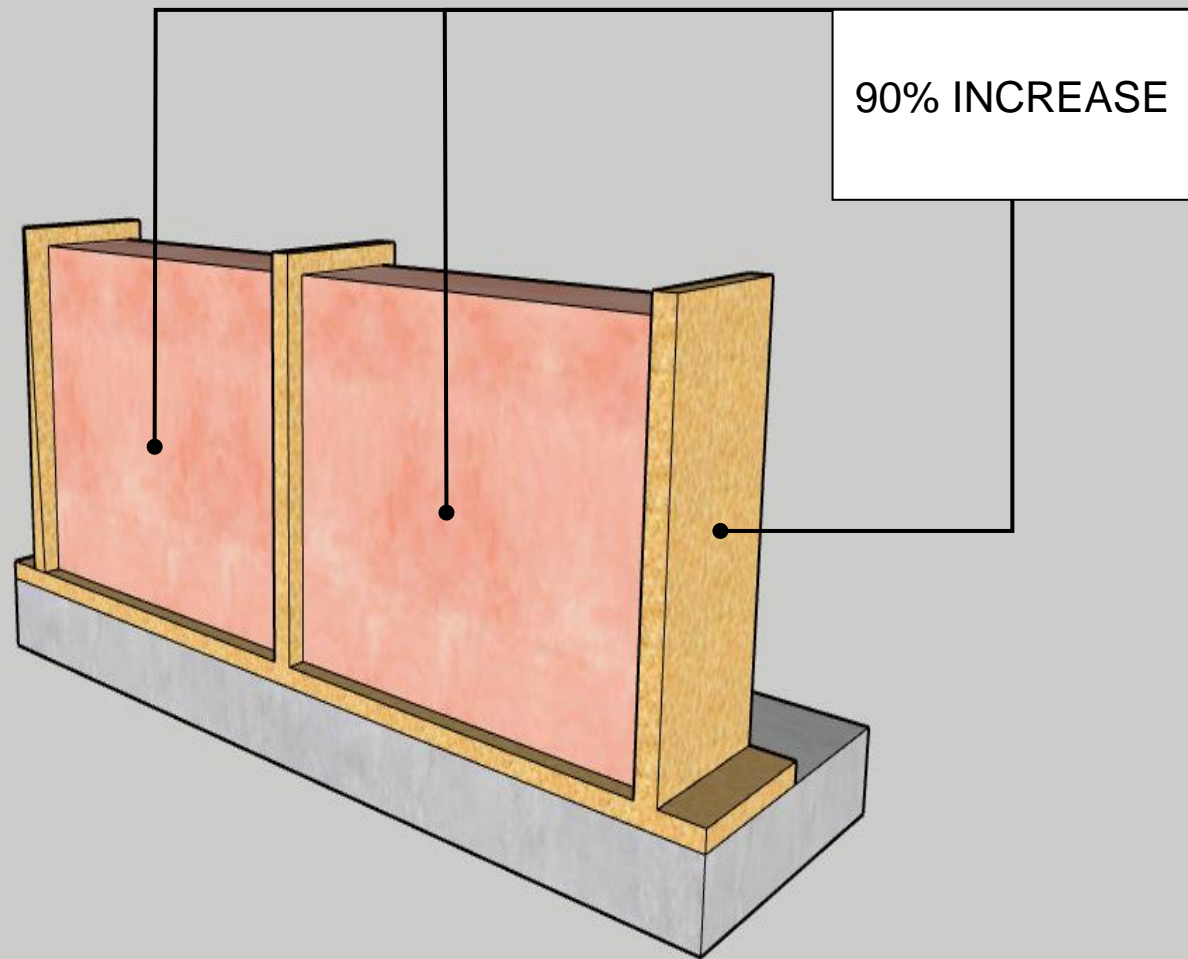


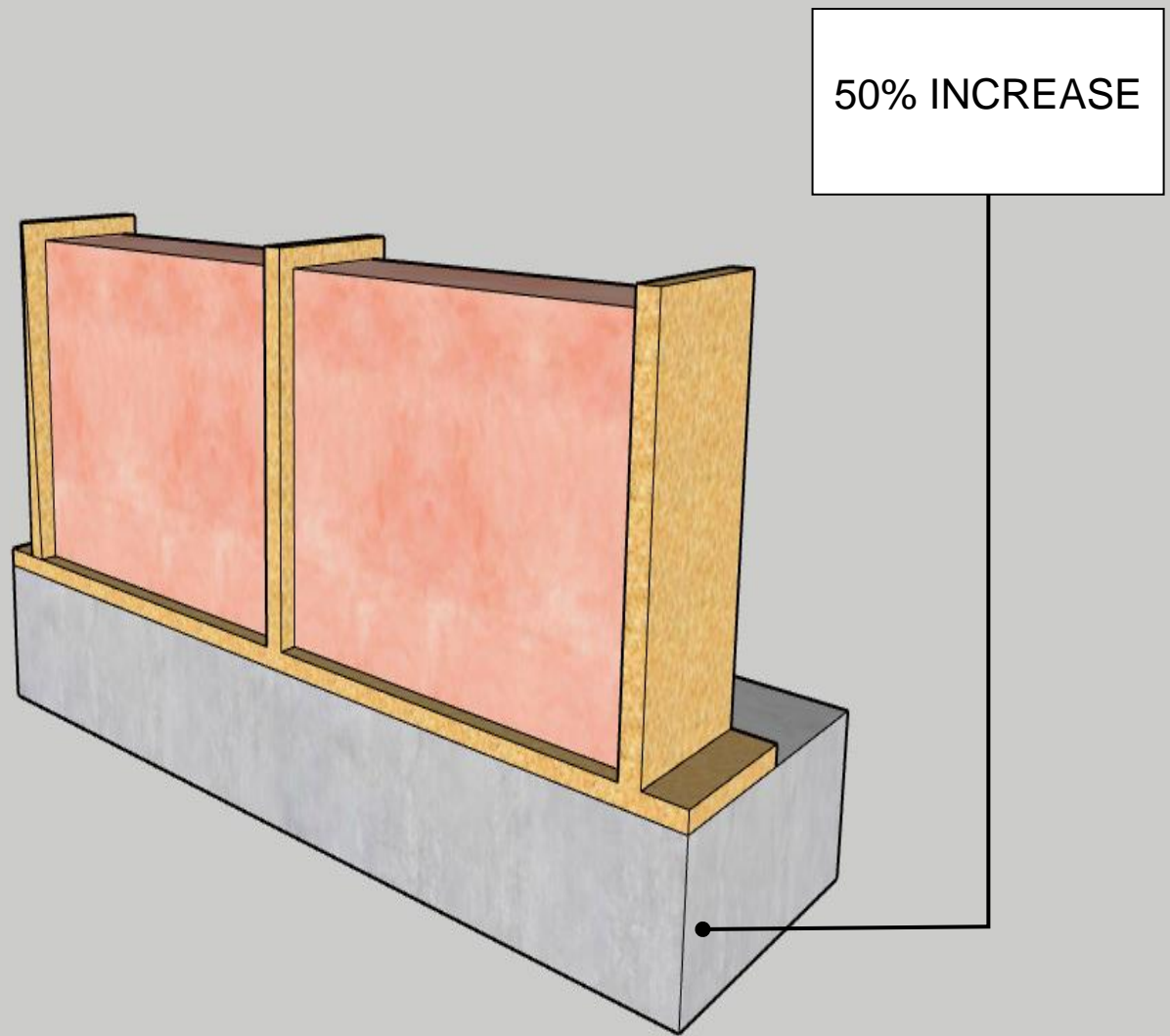




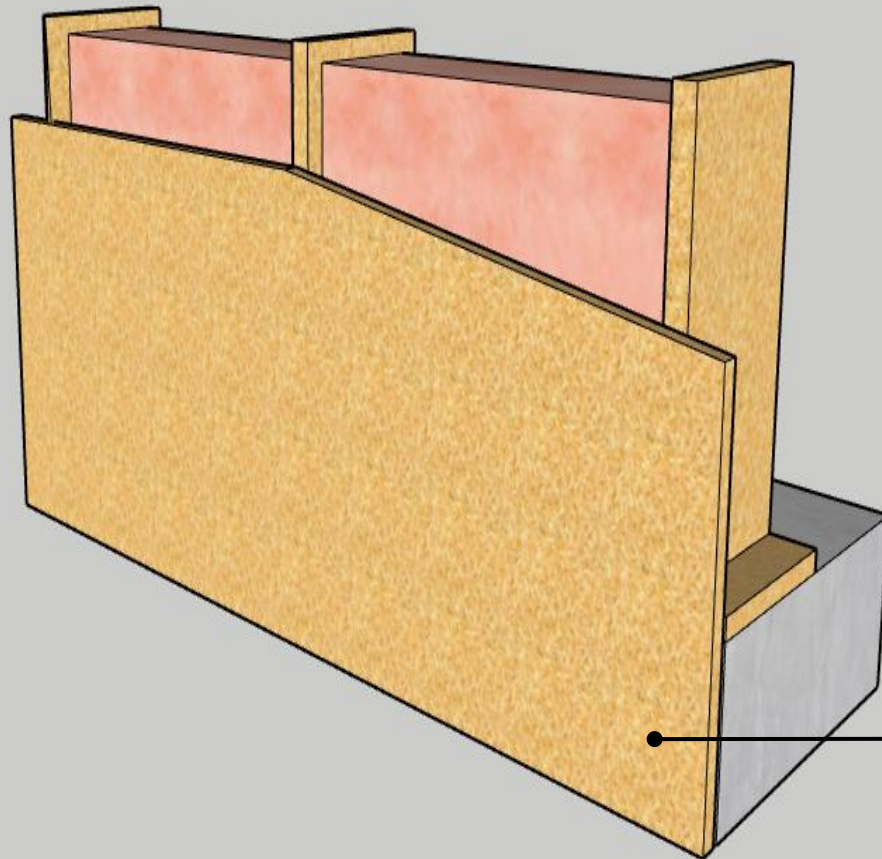




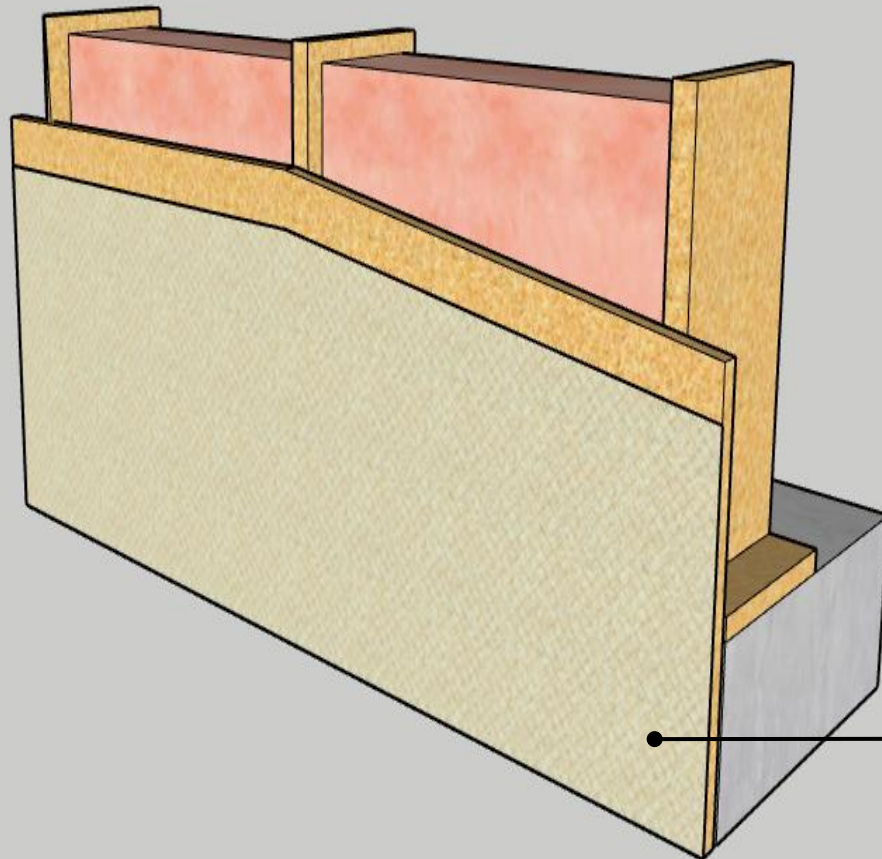


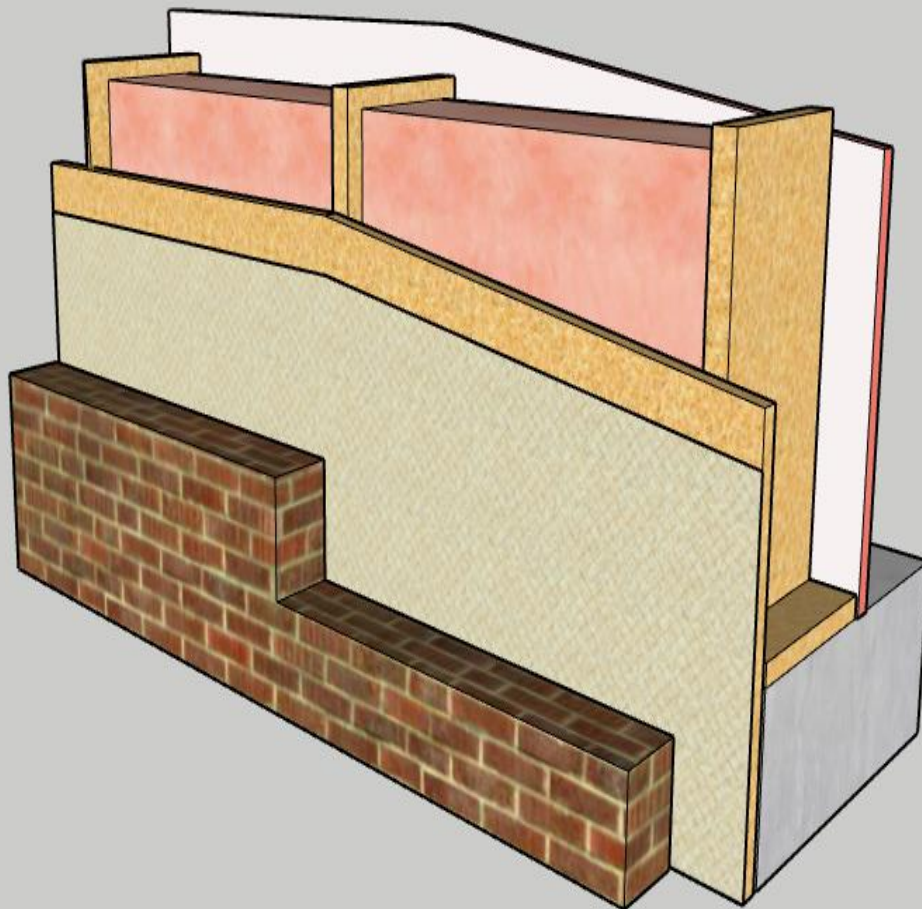


50mm
INSULATION TO
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Pilot 2 Swansea Standard HAPS development



Pilot 3 Swansea Standard HAPS development



HAPS Technologies



Challenges

- Covid recovery
- Supply, demand and cost variants / market volatility
- Policing the experts – developing skills
- Organisational support top down
- Developing sustainable capacity through continuity
- Collaboration – Internal vs External developer
- Sustainable drainage – SuDS / SAB approvals

Achievements To Date

- **5 bespoke infill sites completed**
- **Additional 3 active – site clearance / demolition**
- **Full range of House types designed and constructed**
- **83 homes occupied**
- **10 year program developing – various stages of pre-app**
- **National award winning developments**
- **Promoted on the National stage Town & Council Planning Association and APSE case study**
- **2 Scottish Local Authorities fact finding site visits 5 months**

What To Build Debate?

PassivHaus vs Fabric First

- Passiv is a life style choice – not necessarily a rental choice
- Maximised orientation - Occupancy
- 0.4 air changes p/hr p/cm vs 3.5 – up front investment only as good as end user's usage
- Climate change – should we be considering “cooling”
- Tenants want somewhere to dry their smalls
- Swansea standard “dialled up or dialled down”
- Carbon footprint accredited goods and service
65% international footprint to 85% within 50 mile radius
- Market place competition
- Apprentice on site learning days
- Working conditions - new construction / retrofit



Cyngor **Abertawe**
Swansea Council

“Here are just a few words to say a big thank you for taking Will in as an apprentice and training him. I have seen him mature over the time he has been with your organised system. He has become a skilled carpenter and

in saying that it takes a lot of time and effort for the crucial part



