

## MORE HOMES

Swansea City Council Building Services has successfully delivered its first new build Council houses in a generation, on time and on budget. This achievement was remarkable on several levels given the lack of experience in, cutting edge M&E technology, fast track construction methodology, a shift from 85% of core work being retrofit, to new build construction. The Authorities decision to not only build new homes first time in a generation but, build to a PassivHaus accredited standard, was by far the biggest challenge.

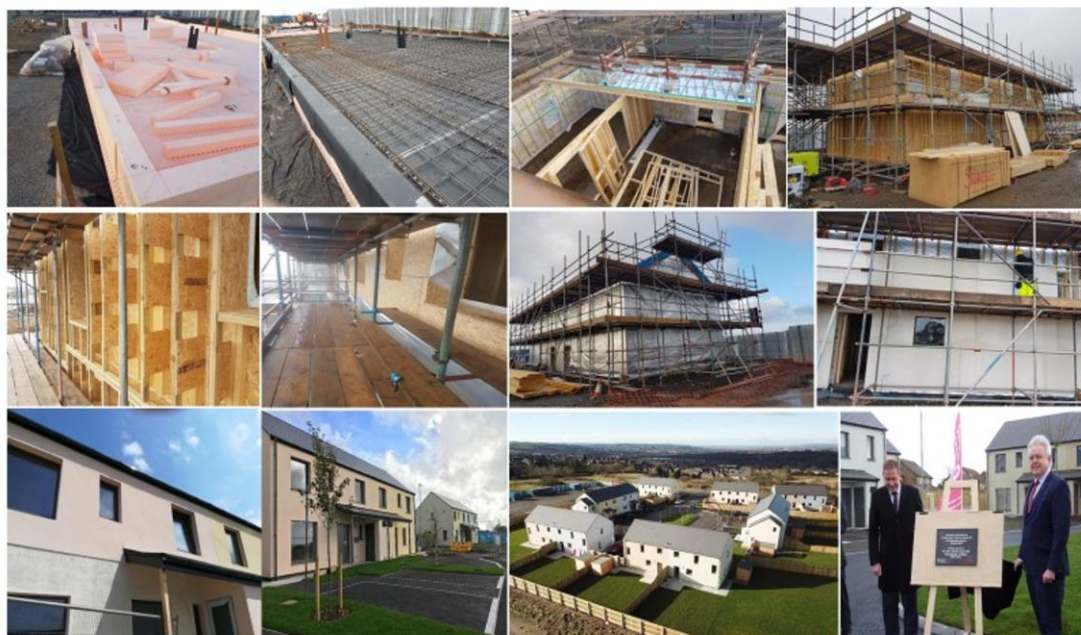
The Passivhaus specification was chosen because it's extremely thermally efficient, reduces annual running costs for tenants. These new homes have been built in one of the most economic and socially deprived areas of Swansea, so reducing fuel poverty for tenants was a high priority for the Council.

The construction technique ensured high levels of mass insulation, no thermal bridging, extremely high levels of airtightness which reduces heat loss, high performance windows and doors for solar gain, and continuous ventilation via a mechanical ventilation heat recovery system (MVHR). To give an example of how extreme this construction methods were, and tolerances allowed, effectively the structure is wrapped in two layers of airtight and wind tight membrane, when pressurised if the internal membrane has 3 holes £1 coin in size, the building will fail the air tightness test

Measurable, 450 on site learning days for apprentices, the project also involved getting 6 long term unemployed individuals who achieved 34 weeks of work experience with 2 securing permanent full-time employment.

Attainment of IIP Accreditation, ISO14002 in a range of business areas and Green Dragon Level 5 for its waste and sustainability initiatives.

## The Journey



Pilot 1 AccreditedPassivHauscheme



Left Cllr Rob Stewart leader of Swansea Council, Right Honourable First Minister for Wales Carwyn Jones (2017)

### Improvements Achieved

A review of the More Homes pilot project identified that whilst accredited PassiveHaus design build costs resulted in a 15% uplift on traditional build costs, the additional investment was by far, outweighed by the benefit the tenants were enjoying of massively reduced energy consumption and resulting lower energy bills.

The lessons learned exercise revealed the marketplace was restricted, lacked competition and drove up costs with in both the supply chain and specialist sub-contractor field. In addition, whilst carrying out an impact assessment exercise, it was perfectly clear the PassiveHaus model was predominantly fed by the European / National markets with any supply or services requiring PassiveHaus accreditations, increasing Swansea Carbon footprint. Timber frame (Ireland) windows & doors (Belgium) insulation (Czechoslovakia) resulting in 65% project supply chain spend went international/National.

Swansea Council's dilemma, the key priority of tackling fuel poverty was absolutely right, the performance of PassiveHaus met the needs of the key priority, but the concept failed on so many other levels. The project team met several times, engaging BRE, before the "Swansea Standard" evolved. The new design brief based on fabric first approach in conjunction with Homes As Power Stations (HAPS) were finalised and presented at Client Housing Future board meeting, before being signed off at Cabinet and then Council, as the blueprint for all future developments.

In preparation and as part of Building Services commitment to creating safe working environment within the heart of built up and established communities, a stay safe campaign was launched and delivered in the local primary schools.



### **Outcomes**

2019 Building Service broke ground on its second “More Homes” site and first “Swansea Standard” development. The Swansea standard sets out to deliver a fabric first approach, using key principles of PassiveHaus in maximizing solar gain, through orientation and size of high-performance triple glazed windows, high levels of mass insulation in construction, no thermal bridging, extremely high levels of airtightness with a target of 4 air changes per minute (building regs 10) Mechanical vent and heat recovery systems and additional sprinkler system. Crucially there was no gas supply installed on this site, assisting Swansea in meeting its Carbon emission reduction targets.

In addition, HAPS will include green energies and will be produced using the latest technologies to support Ground Source Heat Pumps, Integrated Solar Roof Panels systems, Tesla Battery Storage and Mechanical Vent & Heat Recovery Units with Ground source heat pumps.

As a direct result of this innovation, both second and third schemes qualified for Welsh Government innovative Housing Program (IHP) grant £1.5M with schemes being robustly evaluated against the Technical Specification by an Independent Assessment Panel, resulting in recommendations to Welsh Ministers for the schemes to be supported, validating the initiative.

The Swansea Standard has delivered on our obligation to the Wellbeing of Future Generation (Wales) act 2015, in terms of sustainability through localised jobs, supply chains and locally used sub-contractors circa 85%. Within a 50-mile radius.

Building Services has completed its fifth bespoke and infill site, building a range of house types, from 1 bed apartment to 4 bed townhouses. What remains remarkable in this very short journey, has been the whole service area attitude to change and its sense of pride, I cannot articulate enough the vast chasm that was a generation of retrofitting experience to the massive upward curve of new build house construction,

first time in a generation, and to accredited PassiveHaus standard and then Swansea Standard & HAPS. How well the team adapted and embraced change and emerged with a sense of pride and passion, for what they do. I guess to sum up my point, outsourcing house building gives you “Houses” delivering with in-house service teams, gives you “Homes”

Measurables.

- Swansea Standard tenants benefit from 97% self-sufficiency during circa April to October paying utility companies standing charges only. Validated by Cardiff University school of Architecture who are monitoring the Swansea Standard buildings performance.
- 8 internal Trade or Foreperson management promotions,
- 25 permanent & full-time local tradespersons recruited,
- c100% increase of apprentice on site learning days in the shift from PassivHaus to each of the Swansea Standard developments
- Shift from 65% project International/National spend (Passiv) to 85% local spend within 50-mile radius.
- SIRUS registered sprinkler installers – only Welsh local Authority

### **Homes built by apprentices**

In February 2022 building Services were commissioned to deliver a development of 6 two-bed bungalows. The site team isolated 1 pair of semi-detached bungalows and set about programming its delivery using apprentices with strict instruction and enforcement of tradesperson mentors to act in advisory capacity only. There was some pain, blockwork walls being pulled down and rebuilt, insulated render systems scratch off and replastered, miss measures, miss-interpretation of drawings etc., however after a great deal of diligence the end product is amazing and more importantly the learning curve and experience for those involved was priceless, truly, an astonishing achievement!! 85% core work retrofitting to building homes with apprentices only, all in the space of 6 years.