



Case Study

Bell Close

Nine high-quality, low-carbon council homes built on a former garage site, made possible by the use of large format SIPS panels



etOPIA



Beard

BDP.



HOUSING
FESTIVAL



Bell Close, Bristol

Key party information

Client
Bristol City Council

Main contractor
Beard Construction

MMC supplier
Etopia UK
(panelised SIP solution)

Architect
BDP

Project type
General needs
social rented homes

Project start on site
April 2024

Project completion
July 2025

Project description

The Bell Close development in Bristol showcases the UK's first 'GAP Houses', delivering nine, high quality, one-bedroom homes for social rent, on a former garage site. Commissioned by Bristol City Council, the new low-carbon homes are a 10 minute walk from Southmead Hospital and replace a dilapidated backland site and eyesore in the community. The eye-catching scheme incorporates solar PV, air-source heat pumps, secure bike storage and electric vehicle charging to support sustainable and affordable living. Use of modern methods of construction (Etopia's large format SIPs panels) was key in making construction on this highly constrained, sliver of a site possible.



Fig. 1



Fig. 2



Fig. 3

Client drivers

01

Increase social rent housing stock to meet council needs

02

Gentle-infill development on local authority owned land

03

Identify and test solutions to support direct delivery at scale and pace

04

Pilot the 'Gap House' solution for small backland sites

Why MMC?

Minimal disruption to neighbours. With Etopia's large format SIPs panels, the superstructure of each home was erected in five days, despite the constrained site conditions. Follow on trades could then work on the exterior and interior simultaneously.

Site constraints addressed. The large format panels supported a structured workflow. As there was no storage on site, the panels were delivered in batches on stillages (see Figure 5). This ensured the panels were ordered and orientated ready for efficient lifting and assembly.

Minimal waste. The panels were precision manufactured offsite to the required size, so there was almost zero waste on site associated with them.

Quality end product at speed – The panels resulted in a robust and highly-insulated super-structure in a matter of days.

Methodology

Factory manufacturing

The offsite manufacture of all the large format (<6m long) SIPs panels took 6 weeks. Etopia manufacture and store constituent elements of larger panels, so they are ready to pick off the shelf and assemble into larger bespoke panels.

Delivery

The panels were delivered on a 24ft rigid lorry. Being a panellised and flat-pack system, each house would have fitted on a single lorry with no requirement for a wide-load escort (unlike with a volumetric system). In this instance, panels from neighbouring homes were batched and organised to better support the sequential construction process.

On-site assembly

Large format panels sped up assembly on site. Having been craned into position the ground floor panels were rapidly glued and screwed into pre-installed tracks on the slab. Similarly, the floor and roof plates were craned into position as large format cassettes. The panels were waterproof and not susceptible to damage during construction, so there were minimal wet weather-related delays which supported sequential operations and continuous progress. Once the doors and windows were installed, the inside was dry and sealed off.

Energy efficiency

The SIPs panels alone achieved a low U-value of $0.144 \text{ W/m}^2\text{K}$, below the $0.18 \text{ W/m}^2\text{K}$ target for walls in new build dwellings (Part L). The high thermal performance and minimal panel thickness (185mm) helped maximise the GIA of these 1-bed homes. Furthermore, the completed homes achieved an air-tightness of $1.74 \text{ m}^3/\text{hr/m}^2@50\text{Pa}$, well below the $5 \text{ m}^3/\text{hr/m}^2$ for the notional building in Part L. This level of fabric performance, combined with an air source heat pump, 1kWp of roof mounted solar photovoltaics and low energy lighting, has been installed to make these homes as energy-efficient and affordable as possible for the new tenants.

“SIPs was the right solution. Everything's possible, but in terms of time and logistics masonry would have been a huge challenge, so SIPs was definitely the right solution”
Beard Construction (main contractor)



Fig. 4

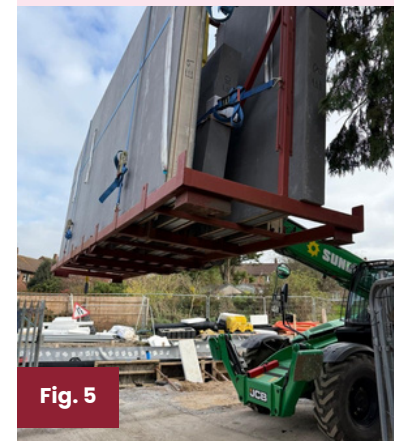


Fig. 5



Fig. 6



Fig. 7



Fig. 8

“The advantage of using SIPs panels is you only bring in what you need.”

**Beard Construction
(main contractor)**

Challenges

Limited access

This long, thin, backland site was surrounded by occupied residential properties and had a single point of access at one end. MMC reduced the number of deliveries and minimised the disruption to neighbours.

Constrained site

Incomplete groundworks at one end of the site, necessitated a bespoke approach to sequencing the installation of the SIPs panels. Meticulous logistics planning, careful batching of panels, and pro-active on-site communication enabled the groundworks, superstructure, scaffolding and follow-on trades to all progress simultaneously in a clear sequence.

Restricted crane operation

Crane operation on site was limited by the weather, but also to within school hours and by helicopters landing at the neighbouring hospital (ad-hoc). Non-mechanical lifting operations were saved for periods the crane was unable to operate, to ensure ongoing progress.

Outcomes

Continuous progress

The team successfully navigated changeable weather conditions, space restrictions and overlapping work programmes resulting in an efficient and sequential build process.

Reduced disruption

Disruption was minimised for neighbours through a fast and efficient superstructure build programme, (resulting in reduced site work), active communication and considerate site practices.

Lower environmental impact

Offsite manufacture of the panels helped reduce site waste and water usage as compared to traditional methods.

Energy-efficient homes

The highly insulated all-electric homes have air-source heat pumps and solar PV, to minimise the bills for residents. The homes achieved a SAP rating of 86, EPC B.

Transformation



Fig. 9

BEFORE (Dec 2019)



Fig. 10

(Circa 2021)

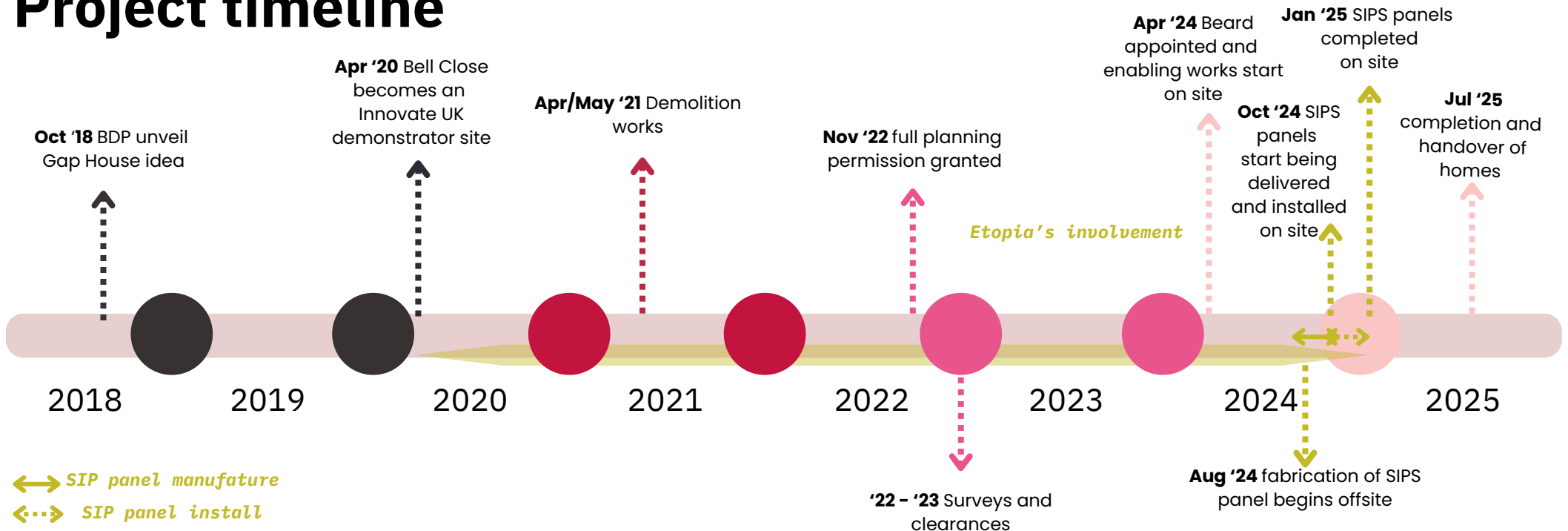


Fig. 11

AFTER (July 2025)

“It's not just the residents that benefit. The whole wider community has gained from the regeneration of a real eyesore and a place where people did fly tipping.”
Bristol City Council
(client)

Project timeline



“ There was a concerted mission here to revitalise an otherwise unused council site to deliver some exceptional, high-performing, energy efficient homes...the output has been phenomenal. ”

Etopia
(SIPs supplier)



A UK first and pathfinder project

These innovative and collaborative new homes may have taken seven years to drive from conception to occupation, but the successful delivery of nine ‘GAP house’ homes at Bell Close, testifies to the potential for quality social rent homes on small, tricky, backland sites, of which there are thousands in local authority ownership nationwide.

Such highly innovative projects are never going to be the quickest or cheapest. However, they pave the way for subsequent schemes to capitalise on the design and product development, build experience, expertise, collaboration and enable learning.

Suppliers like Etopia are important in supporting the diversification and acceleration in the supply of affordable homes. These exemplar homes at Bell Close will help inspire and support the uptick in the number of social rent homes the country desperately needs by enabling the delivery of low-carbon homes on other small sites.

Housing Festival, 2025

For enquires please contact Etopia at:
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This project case study has been commissioned by SIPs panel supplier Etopia and produced by Housing Festival. Thanks go to the project team for their insights and contributions.