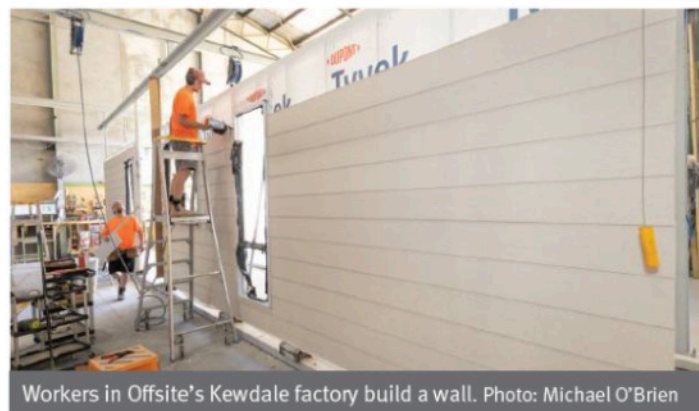




Marlo Blackbeard says the industry is growing more accustomed to frame construction methods. Photo: Michael O'Brien



Workers in Offsite's Kewdale factory build a wall. Photo: Michael O'Brien

## Technology taking builds beyond brick

Perth builders are increasingly embracing alternative construction methods.



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THERE'S no doubting the role bricks have played in construction in Western Australia for many decades, particularly in the residential housing sector.

Marketing has certainly played some part in this, with advertisements going back to the 1950s touting the clay compound's robust qualities.

WA's sandy, stable soils are one reason brick homes are so pervasive across Perth. But alternative building technologies – including steel and timber framing, prefabricated panels and modular homes – are gaining traction.

Housing Industry Association data points to an expansion in the use of these methods during the past 12 months.

A recent survey to its members showed that 30 per cent of new

homes were built using materials other than brick.

This compares with Australian Construction Insights data in 2018, which showed 24 per cent of WA homes were built using alternative methods.

HIA WA executive director Michael McGowan said the proliferation of alternative construction methods was accelerated by the pandemic.

Government stimulus during COVID to incentivise homebuilders exposed a severe shortage of tradespeople, as it followed a period of economic downturn during which workers left the state.

Additionally, construction costs increased dramatically and led to the collapse of several builders caught out by fixed-price contracts.

These factors, coupled with material shortages, impinged on

the industry's ability to build homes in a timely manner, with home builds blowing out to three years in some cases.

The state has failed to keep up with burgeoning demand for homes in recent years, with a current shortfall of about 10,000 houses per annum in WA.

While the number of bricklayers has grown slightly in the past five years from about 5,000 to 5,500, Mr McGowan said there were still not enough to build the homes the state needed.

"We need about 25,000 homes a year," he said.

"There are bricklayers, but it will take too long to get enough bricklayers to build that many homes.

"We're going to have to find different ways to build."

## “After COVID, things started ramping up

– Marlo Blackbeard

The number of bricklaying apprentices has increased from 114 in June 2019 to 299 in December 2023, according to Brick and Block Careers.

While this is good news for the industry, more are required to meet high demand.

Mr McGowan said the use of steel-framed construction, which represented 9.6 per cent of new homes this year, had increased in the past year.

“We started to see steel enter the market more over the last decade, predominately through use as roof battens,” Mr McGowan told Business News.

“However, since the well-documented bricklayer shortage, we have seen more customers willing to switch to alternatives, including steel, for wall and roof framing in an effort to complete their projects faster.

“In WA, we need to evolve with the changing requirements of consumers and workers.”

### On the ground

Volume builders and developers are increasingly embracing alternative build methods, with land developer Stockland and industry stalwart Dale Alcock utilising prefabricated systems on some projects.

Offsite has ramped up its production in the past six months in response to industry demand.

The Kewdale-based company manufactures timber frames for houses, which are transported to site and assembled using cranes.

Given the manufacturing process largely occurs in a factory, Offsite's method enables a home to be erected within days.

The company recently supplied steel framing for 10 two-storey townhouses for Dale Alcock Projects in Glendalough, where it took six months from slab down to completion.

This compares to more than 12 months using traditional methods.

INKA built townhouses for



INKA built townhouses for Stockland using timber frames at Treeby estate. Photo: INKA

Stockland using timber frames at Treeby estate. Photo: INKA

Offsite general manager Marlo Blackbeard said demand for timber-framed homes was growing.

“After COVID, things started ramping up,” he said.

“Last October, we went to two shifts to keep up with demand.

“The guys [carpenters] work three days, 12.5 hours per shift, and we run six days a week. We've got capacity to put more people on, and [for] a third roster.”

Offsite delivered about 60 homes last year and hopes to double that in 2024.

In the business's early days, Mr Blackbeard said, clients would ask Offsite to build to the specifications of a brick home.

“When we first started, people would give us brick plans, and say ‘Can you build this a bit better?’, which isn't the ideal way to do it,” he said.

“But now we're working directly with the developers and architects early on, so we'll give them our specifications and work with them on a design that's going to suit off-site construction.”

ASX-listed land developer

Stockland also utilises Offsite's timber frames for its housing estates.

Speaking to Business News last month, Stockland general manager WA residential Col Dutton spoke about the company's initiatives using alternative building methods.

These include its Garden House project in Sienna Wood, where it partnered with DevelopmentWA to deliver affordable timber-framed homes.

At its Canopy townhouse project in Glendalough, Stockland is combining brick and timber to improve build times.

Eastern states markets are dominated by steel and timberframed homes, with double brick considered a more marginal building method.

Economies of scale are a key consideration when it comes to selecting a build method, and WA has ready access to large volumes of bricks.

New Home Building Brokers founder Tristan Kirkham said cost was the main factor holding back alternative build methods from being more prevalent in WA.

“I've never seen more builders look at it, consider it and take it on,” he

said.

“But the problem is what the consumers are willing to pay.

“Everyone wants to do it, until the cost comes out.”

Mr Kirkham said if bricks were priced at about \$1.65 each, consumers would likely stick with traditional methods over frame or panel builds due to the price comparison.

As bricks became more expensive, however, the pendulum swung more toward alternative materials.

Bricklayers are currently pricing bricks at around \$1.85 each, or about \$2.40 for smaller builders, down from about \$4 during COVID but up about 20 cents from recent months.

Mr Kirkham, an independent building broker, added that the gap between the cost of brick construction and panel and frame builds was narrowing.

“It's getting closer, with the cost of products,” he said.

He added that, as alternative build methods grew, so did the volume of trades equipped to build via these methods.

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Johnathan Goldsworthy is passionate about innovation in home building. Photo: Michael O'Brien

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“People don’t care about what their house is built out of anymore; they just want a house

– Jonathan Goldsworthy

In some cases, Mr Kirkham said, it could cost \$20,000 or \$30,000 more to build a home utilising non-traditional methods.

But he pointed out there was no simple cost comparison between brick and alternative building methods, and it was not always a matter of one being cheaper than the other.

“You can’t work out a quick calculation; the only way to do it is cost a job after it’s drawn,” Mr Kirkham said.

INKA general manager Danielle Devereux agrees.

The Osborne Park builder utilises timber frame and double brick construction, and often blends both methods into a home.

Ms Devereux told Business News the cost comparison between the two methods came down to design factors.

“Sometimes it [timber] can be [more expensive], and I think that’s the million-dollar question,” she said.

“It depends on how you’re looking at it, [and] you have to look at design first.”

Ms Devereux said consumers needed to look at the orientation of their homes from an energy

efficiency perspective, as well as the configuration of the rooms.

“We offer up masonry and timber. I don’t really mind what you want to do, it’s up to you, and what is best for your project,” she said.

“There have been times we want brick because it’s the best option for the client, but then we have other designs where timber frames outperform every day of the week.”

Ms Devereux used a reverse-living scenario as an example, where a person’s kitchen and main living areas were upstairs.

In that situation, a home’s embodied energy was important, so having concrete embedded into the structure was recommended, ideally upstairs, she said.

“[We might then] look at doing a hybrid construction, so we can then have a concrete set of stairs and then we’ll do timber,” Ms Devereux said.

“That’s when you go back to design. I wouldn’t be able to answer that question for you straight away until I knew what the design was like.”

Ms Devereux acknowledged the role steel played in expediting the delivery of homes but said the choice between timber and steel

often came down to environmental sustainability.

“If you were to compare [timber] to steel from an emissions perspective, the emissions from steel manufacturing are far greater than when you look at timber,” she said.

“Steel is definitely something that needs to be brought into the picture, because that is absolutely a consideration I would say in the same tone that timber is right now.

“But it depends on what your driver is ... or what your motivations are.”

Ms Devereux said customers driven by energy efficiency or sustainability would be more likely to pursue timber-framed construction, whereas if timeliness was a key factor, steel or timber would both be beneficial.

A criticism of timber-framed homes is their potential susceptibility to termites, but Ms Devereux said all structural timber was adequately treated against the pests.

Steel-frame manufacturer Centurion Framing Systems has increased its production in recent years to about 600 homes per annum.



Max Pirone says steel-framed homes rely less on skilled labour than those built using traditional methods. Photo: Michael O'Brien

The company's business development manager, Max Pirone, would like this number to increase.

"We could be doing up to 3,000 homes," Mr Pirone told Business News.

"If we could nail 3,000 I think that'd be a really good goal for us and we can grow that.

"There's no reason as a business we couldn't be doing 5,000 homes a year at some point."

Mr Pirone said the company would need to expand its warehouse facility, currently in Malaga, to accommodate that number of homes, but 5,000 was not an unrealistic figure given the number of homes needed in WA.

"When you look at 25,000 homes a year, as a percentage of that [5,000 is reasonable]," he said.

Centurion Framing Systems, which has recently introduced a roof framing product to add to its wall systems, works with volume builders including ABN Group.

Speed is a clear benefit of the Centurion system, which enables a home to be reach lock-up within days.

Mr Pirone explained that steelframe construction relied less on skilled workers than traditional build

methods.

"With steel homes you certainly need a workforce, but you're not reliant on highly skilled workers," he said.

"Because we're pre manufacturing and modulating components, then we're taking the guesswork out of certain things and the high level of skill that's required.

"It's made in the factory, and essentially they're putting it together like a Meccano set."

Many Centurion homes are completed with brick veneer, with a single layer of bricks on the exterior.

This reduces the reliance on bricks but provides a similar look to a double-brick home.

SIP, or structural insulated panel, homes are also growing in popularity.

SipForm, a Malaga-based prefabricated panel manufacturer, utilises technology to design energyefficient homes.

SipForm director Jonathan Goldsworthy started his career as a carpenter in New Zealand at age 17 and has a long-held passion for developing precise building methods.

"We are able to build twice as fast



Centurion Framing Systems' Malaga factory. Photo: Michael O'Brien

as brick homes," Mr Goldsworthy told Business News.

"We are offering a product, [so] your house is a manufactured product, not a built thing."

SipForm's in-house designers construct homes virtually, geolocate them, conduct sun studies, and make them as energy efficient as possible. The model is suited to large-scale projects, due to its

ability to be replicated, and the company has a presence in the eastern states.

The digitally built homes are sent via a file to other locations, with the idea being that they can be constructed from any SipForm facility, including its factory being built in northern NSW.

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# 30%

## NEW HOMES BUILT USING ALTERNATIVE METHODS

Source: HIA



Natasha Di Ciano, with NXT TEC's patented piling system, says the company is growing. Photo: Michael O'Brien

In WA, SipForm has built more than 100 homes and is experiencing a significant increase in demand this year.

Mr Goldsworthy said the turmoil in the construction industry post-COVID alerted Western Australians to the possibilities of building in ways other than double brick.

"People don't care what their house is built of anymore; they just want a house," he said.

"It [COVID] forced people to look past the status quo."

Canning Vale's NXT TEC has developed a patented construction model that enables a steel and concrete home to be built in up to 10 days.

The building technology company, which focuses on the affordable housing market, is set to boost its production this year, a decade on from its inception.

It has approval to deliver 400 affordable homes in Anketell in stages, with an NXT TEC-licensed builder assigned to the project.

NXT TEC director Natasha Di Ciano explained that the company would erect a mobile precast manufacturing facility near the Anketell estate for ease of access and to reduce transport emissions.

Like other prefabricated methods, there is little to no waste on NXT TEC sites.

"It's a very precise system, where we can predict exactly the amounts of materials required and quantities," Ms Di Ciano said.

"We can also measure through

lifecycle how environmentally sustainable the materials have been as well, and we source our materials from other parties and suppliers that are also sustainable."

She said it was important the entire construction industry moved towards sustainable building practices and provided transparency around factors including waste.

Volume builder Summit Homes is another to have experienced growth in uptake of its modular and steel home products during the past 12 months.

Summit Homes general manager modular and backbone steel division, Brad Bairstow, said all of the company's 1,000 home starts this year incorporated steel.

"Eighty per cent are steel walls and 100 per cent are steel truss roofs," he said.

"We used to build 100 per cent stick timber roofs, we are now at 100 per cent truss."

Mr Bairstow said the company delivered about 55 modular homes last year and expected that figure would be closer to 150 this year.

"It is becoming increasingly mainstream," he said.

"The modular homes that we're building; they're not like mining camp dongas, these are properly specced homes.

"They're built on a concrete slab just like a regular house, except it's a prefabricated concrete slab, and they have all the features and functions of a regular home except

that we build it in the factory instead of building it on site."

The popularity of granny flats and tiny homes, a sector in which Summit Homes also has a large market share, has also grown considerably in recent months.

### Policy

The state government's medium-density code, which comes into effect this month, will potentially result in a greater uptake of frame- and panel-build methods, experts say.

Planning consultant Developed founder and managing director, Daniel Paton, said alternative build methods worked well on narrow blocks.

"For single or grouped dwelling on narrower blocks less than ten metres wide, framed housing will allow better use of space given the narrower wall profiles," he said.

Mr Paton said the integration of steel, brick and timber would provide flexibility and allow for a diversity of housing outcomes.

The introduction of the new National Construction Code in WA next year will likely draw more consumers to alternative methods, with timber and prefabricated methods having an emphasis on sustainability.

Industry groups including the Property Council of Australia and Urban Development Institute of Australia are calling on government to invest further in alternative construction methods.

"We recognise that we can't just

continue to build houses the same way we always have, we need to look at innovation and opportunities to increase capacity that way as well," UDIA executive director of strategy and policy Sarah Macaulay said.

"There's no silver bullet to address the housing crisis, it definitely needs a multi-pronged approach with all levels of government and industry working collaboratively to make sure that we've got housing choice."

Property Council of Australia WA Division interim executive director Emily Young called for a greater emphasis on prefabricated construction in WA and for investment to boost domestic manufacturing of these products.

Housing Minister John Carey pointed to the state government's pilot modular home program, initiated in 2021, which forms part of its \$2.6 billion spend on social and affordable housing.

"Since the establishment of the pilot modular build program, 200 modular homes have been contracted and most are currently under construction, with seventy-six completed to date," Mr Carey said.

"These homes are being delivered throughout regional WA, including in the Pilbara, Great Southern, South-West, Wheatbelt, Goldfields, and the Kimberley."

The government recently delivered four tiny homes in Spearwood, as social housing, utilising prefabricated construction methods.